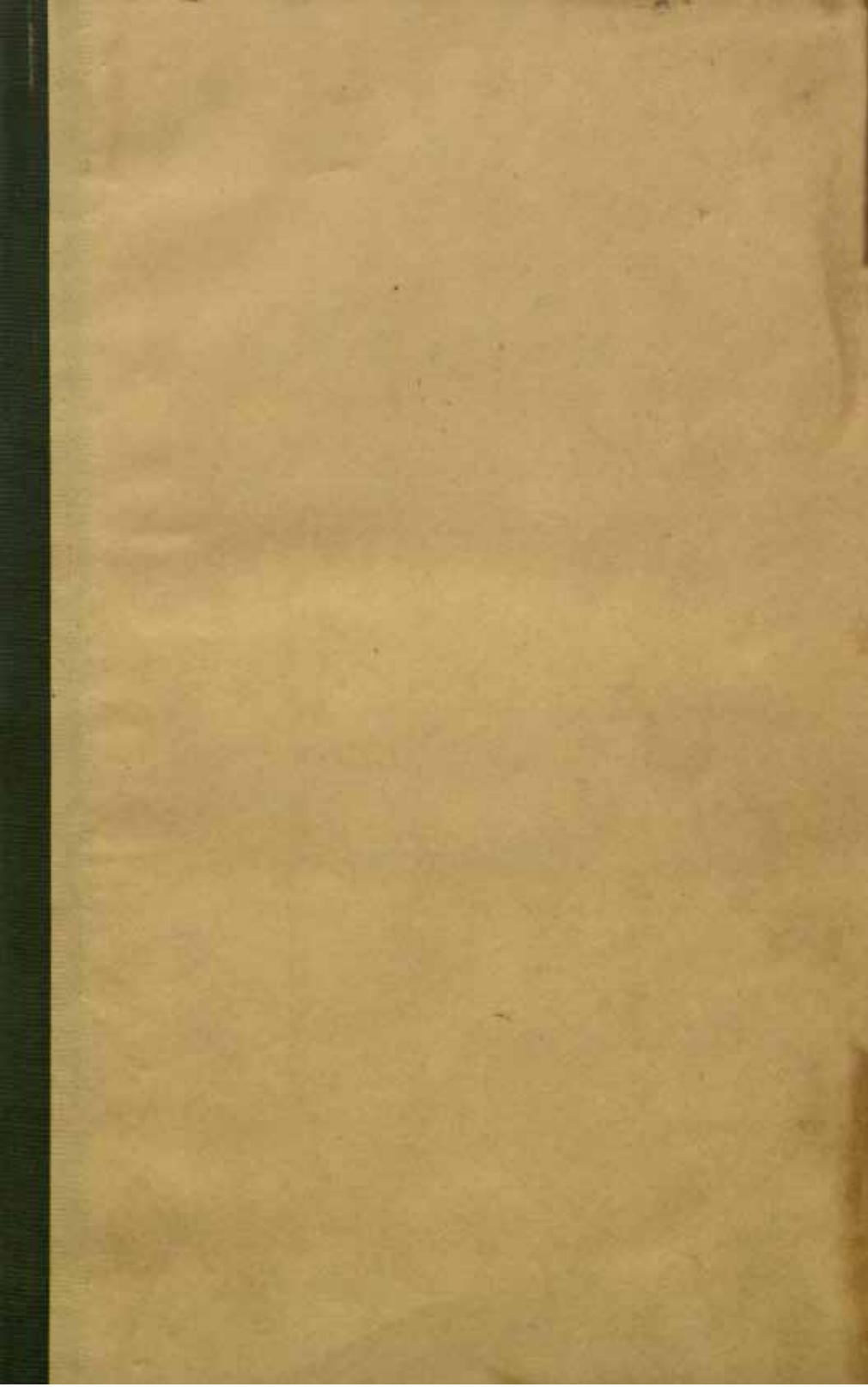


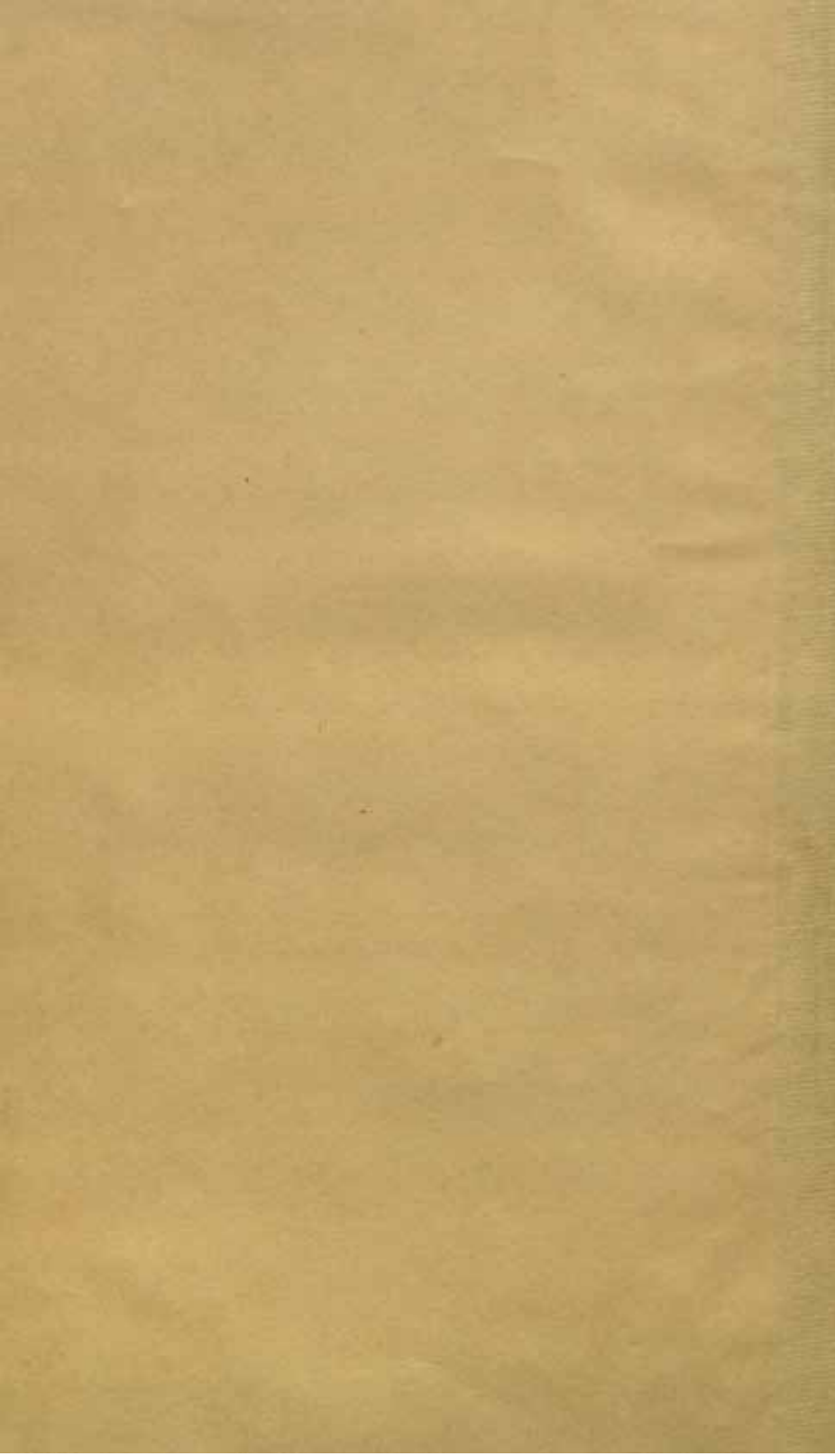
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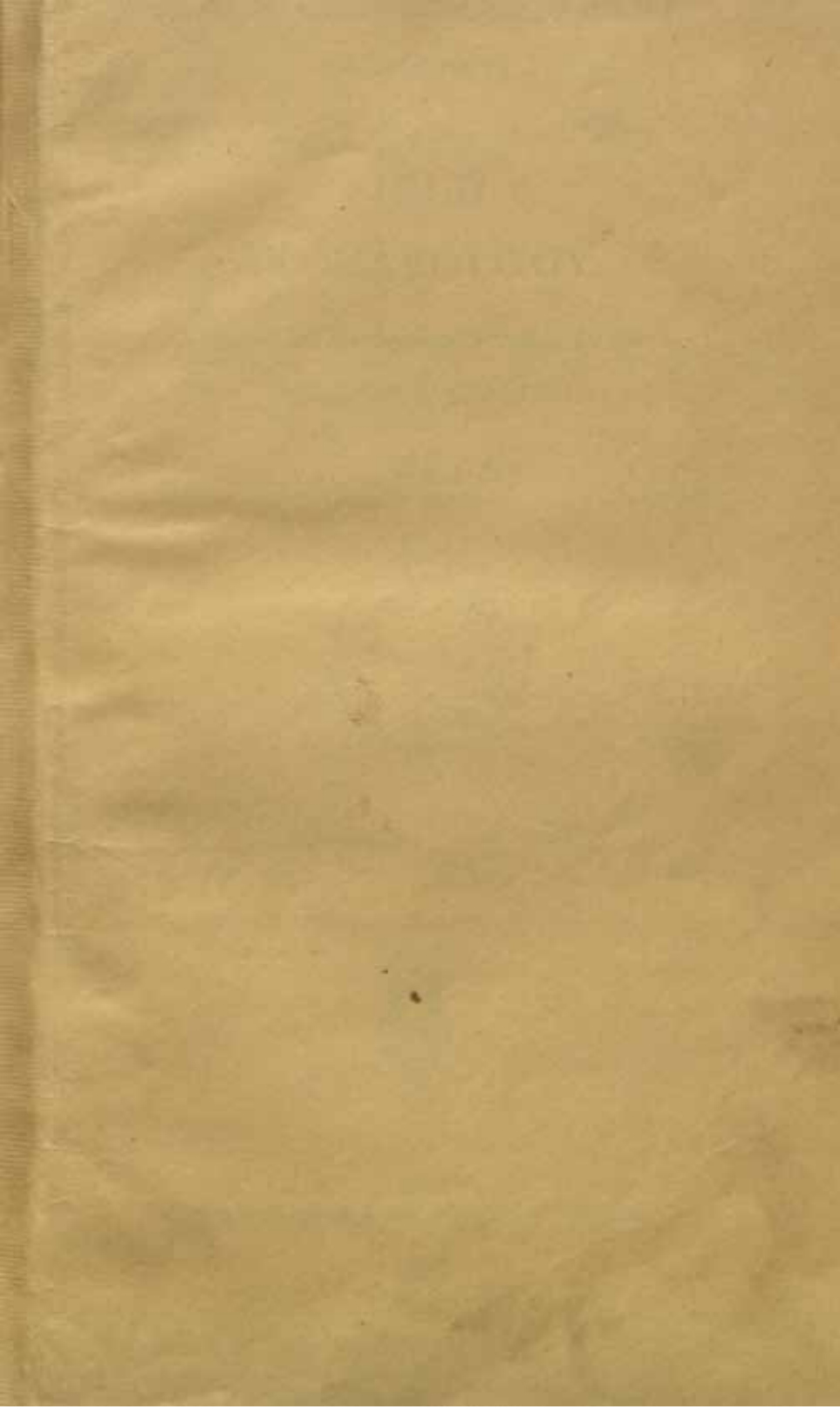
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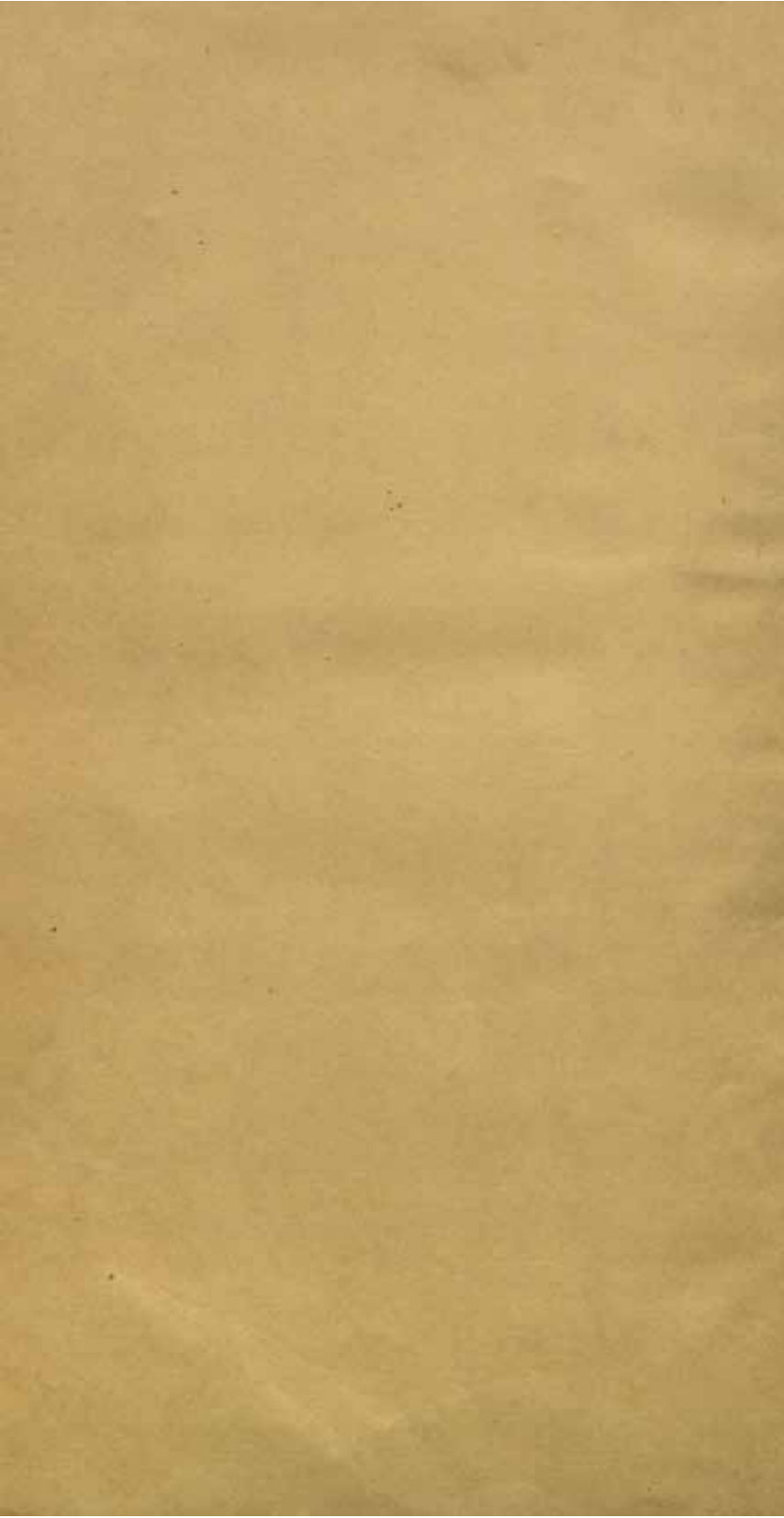
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FIELD ARCHAEOLOGY

Some notes for beginners issued by the
ORDNANCE SURVEY

42185

FOURTH EDITION



571.01

G.B./O.S.



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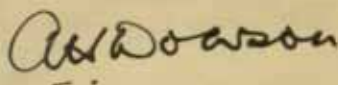
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PREFACE

THE archaeological side of the Ordnance Survey's work was first put on a professional basis in 1920, one hundred and nineteen years after the appearance of the first Ordnance Survey map showing archaeological features. During the forty-two years which have elapsed since 1920 there has been a great increase of public interest in field archaeology. Much of this has been due to the work of the first Archaeology Officer, the late Dr. O. G. S. Crawford, C.B.E., Litt.D., F.B.A., who was the author of the first and second editions of these notes issued in 1921 and 1932. They were considerably revised and brought up to date in the third edition of 1951, but the continued advance of their subject in complexity and public appreciation now makes a fourth edition necessary. Earlier editions paid only passing attention to the problems of Scotland, but an attempt has now been made to give a balanced view of field archaeology in the whole of Great Britain. This completely new edition has been prepared by Mr. C. W. Phillips, O.B.E., M.A., F.S.A., the present Archaeology Officer, with the help of his Assistant, Mr. A. L. F. Rivet, M.A., F.S.A., and of Mr. R. W. Feachem, M.A., F.S.A., of the Royal Commission on Ancient and Historical Monuments (Scotland).

The archaeological work of the Ordnance Survey owes much to the assistance given by its friends, both amateur and professional. It is an example of the successful collaboration of two forces to a common end; on one hand there is the private field worker in the succession which runs back through General Pitt Rivers and Sir Richard Colt Hoare to General William Roy, William Stukely and John Aubrey, and on the other the co-ordinating activities of the Department. This handbook is issued in the hope that it will help to extend and further enrich the British tradition of the study of field antiquities.



Ordnance Survey Office,
Chessington.
1963.

Major-General,
Director General,
Ordnance Survey.

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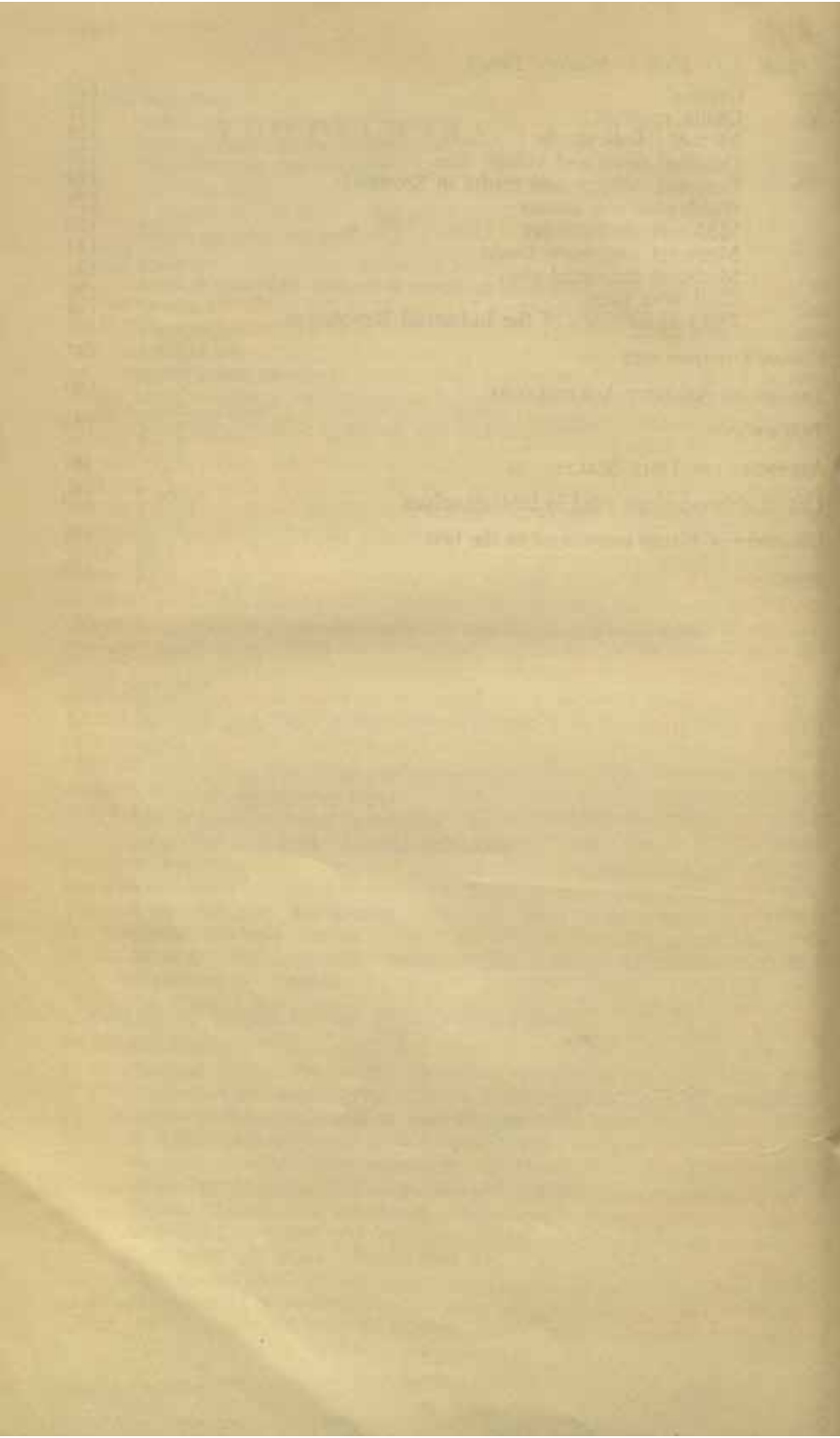
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FIELD OF ARCHÆOLOGY

Notes for Beginners

INTRODUCTION

IN 1921 the Ordnance Survey first issued a modest publication designed to help beginners in field archaeology. In those days the public for such reading was small, and an interest in archaeology could still be regarded as a mild form of eccentricity. Forty years on the growth of mass communication and the general possession of more leisure and means of travel have changed the picture and interest is now widespread. New techniques have developed which have revolutionised the process of studying and dating the past, and more are in an early stage of growth. Only one of these . . . the use of air-photography . . . was in full action at the time of the original publication and its development was pioneered by the late Dr. O. G. S. Crawford, the first Archaeology Officer of the Ordnance Survey. It was he also who wrote the first and second editions of these Notes. Today the air-photograph continues to play a leading part in the reconnaissance side of field archaeology. After reconnaissance, with which we are principally concerned in this book, there can follow excavation and the interpretation of its results. All these activities combine to give a startling increase to the potentialities of archaeological study, but there is still no substitute for the patient examination of the ground on foot as a preliminary to any form of more detailed study.

The Archaeology Division of the Ordnance Survey is engaged in making and keeping up-to-date as full a record as possible of the topography of British archaeology, and in this it gratefully receives the help of many amateur and some professional archaeologists. It is therefore concerned to increase the field survey competence of the amateur archaeologist in the whole of Great Britain; that is the aim of this publication, but it should also help the public to a better understanding of the remains of the past still to be seen about us.

Today the Ordnance Survey is making the most comprehensive overhaul of the country's map system which has been undertaken since the original survey was completed in 1898. This takes a double form; resurvey in some areas and the revision of the existing plans in others. Resurvey is concerned with the mapping of all the more important towns and built-up areas at the scale of 1/1250 (roughly 50 inches to a mile), and also the preparation of a new series of maps at the 6 inch scale of the highland and sparsely populated parts of Great Britain, most extensive in the north and west of Scotland. Here the older map series was also at the 6 inch scale, but its many inadequacies have made resurvey by modern methods necessary. By far the largest area of the country is affected by revision alone, however, and this is at the 25 inch scale. The 1/1250 programme is now well advanced towards completion, but much remains to be done on the other scales. The whole process is expected to be finished some time during the 1980s.

An opportunity has thus been presented to get the whole of the country's archaeological topography adequately mapped and recorded. At the end of the first survey in 1898 an enormous number of antiquities of all kinds had been accurately placed on the maps, but before 1920, when the first Archaeology Officer was appointed, the Survey had relied on the help of various outside authorities and individuals for the siting and authentication of antiquities. More recent work has shown that the achievement of the Survey in this field during

the 19th century was unequal in different parts of the country. Incorrect descriptions are to be expected in work done when field archaeology was in an early stage of development, but a serious weakness now due for correction is the omission of many features which should have been included on the first large-scale survey. It was public criticism of these faulty descriptions and omissions which brought about the appointment of the first Archaeology Officer.

Since 1920 much has been done to correct these defects, but the revision of the archaeological matter on the plans cannot go faster than the revision of the plans themselves.

Antiquities are always exposed to many form of wastage and loss, but the threat to them has been intensified by all the many recent changes in the use of land. Large areas are being built over round the towns and in the country deep ploughing and opencast mining take their toll. Even in the remoter areas the break-up of marginal lands, the requirements of military training, and the vast new plantations of the Forestry Commission destroy or limit access to many things which would have seemed safe fifty years ago. The current revision of the map system by the Ordnance Survey provides the opportunity to record threatened sites and monuments before they disappear for ever.

It may be asked why so much trouble should be taken over this business of mapping and recording antiquities. A due attention to the preservation of the principal monuments of its past and the conservation of the records of its earlier life and development are the recognised duty of a civilised state. This is acknowledged in Great Britain by the maintenance of a number of services of conservation and record. After the state museums the chief services in the field of archaeology are the Ancient Monuments Inspectorate of the Ministry of Public Buildings and Works and the three Royal Commissions on Ancient and Historical Monuments in England, Scotland, and Wales. The task of making a detailed record falls principally on the three Royal Commissions which prepare and issue inventories county by county, but the rate of their progress is such that they are unlikely to complete their very extensive and difficult work within this century. It is therefore desirable that a quick basic record giving the most important facts about archaeological sites, and particularly their precise location, should be made without delay, and the revision of the maps of Great Britain which is to be completed by the Ordnance Survey within the next twenty five years gives its Archaeology Division the opportunity to make this record. This should go far to offset the threat to archaeological knowledge made by the activities of the modern world.

The Survey has now created an organisation for gathering information by the examination of written records and by field investigation which leads directly to the effective revision of the archaeological detail shown on its maps. Frequent disturbances of the soil and the greater interest and mobility of the public lead to a large increase in the number of archaeological discoveries in the field and it is not easy for the Archaeology Division to keep pace with all these developments. Total knowledge can hardly be achieved, but the public can and does give valuable help by sending information to the *Archaeology Officer at the Ordnance Survey Office, Leatherhead Road, Chessington, Surrey*, and, in the case of Scotland, to the *Assistant Archaeology Officer, Ordnance Survey Office, 43, Rose Street, Edinburgh 2*. This is always welcomed, and when it is of real significance, is investigated and recorded. From its beginning in 1791 Ordnance Survey archaeological work has received much help from the public, and the need for this help was never greater than today. Where it is not practicable to show the new material on the main series of published maps it still goes into the Division's records to increase its capacity to deal with the area concerned and to provide material for the compilation of its Period Map series.

The Ordnance Survey has now long given up its old rule that, to be noticed as an antiquity, a feature must be older than 1688. Nearly three hundred years have passed since that date and much matter for investigation has been created in Britain since that time. An obvious example in the archaeology of the countryside is to be found in the many villages and crofts in the Highlands of Scotland which have been abandoned in the past 200 years. These are now as much antiquities as any Romano-British site on the chalk hills of Wessex. The period since 1688 has also seen the rise and progress of the Industrial Revolution which has profoundly affected the pattern of population by developing manufacturing and mining centres and by covering the country with a network of communications. The idea of industrial archaeology being a serious matter for study may seem novel, but it is both sound and opportune today.

The Survey is now concerned to collect all the information it can get about the location of important abandoned industrial sites. Important also are the sites of early tram roads, railways, docks, and canals. The tidying-up process which is in progress in some areas wrecked by industry in the past is now removing many of these traces so that there is no time to be lost in recording them. An excellent example of archaeological work in this recent period has been the excavation and consolidation of the original furnace at Coalbrookdale in which Abraham Darby first successfully smelted iron with coke in 1709. It is not expected that this kind of information will make much showing on the published maps for some time to come save in exceptional cases, but the information should be collected against the day when it will be widely required.

The Ordnance Survey maps as an aid to field archaeology

No serious field work can be done without maps. Whether it is a field-by-field search for new sites, the following-up of air-photographic indications on the ground, or the reconsideration of features already known and sited, a proper record should be the object of the work, and a prime feature of this must be an accurate statement of position. Here attention may be drawn to the National Grid system of reference to be found on all 1 inch maps and under process of application to the whole Ordnance Survey series. This simple system makes a precise indication of position easy to achieve.

Ordnance Survey maps with their great wealth of topographical detail and large array of names contain much matter which directly bears on the solution of archaeological problems in the field. Boundaries, whether parish or county, can be vital to the study of Roman roads, and anomalies in their course sometimes reveal the presence of important sites no longer visible on the surface which were respected when the boundaries were first laid out. The multitude of names on the map can also tell the story of successive waves of population and the consequent appearance of new languages, besides being frequently allusive to archaeological features which may or may not survive in recognisable form on the ground. The shape of the countryside and the distribution of water supply are clearly shown and are of importance to the field worker.

Every part of Great Britain is mapped on the scale of 6 inches to the mile, and most areas have cover at the 25 inch scale. The range of scales down to the 1 inch series is as follows:

1/1250	...	...	...	50 inches to the mile.
1/2500	...	...	...	25 inches to the mile.
1/10560	...	...	...	6 inches to the mile.
1/25000	...	...	...	2½ inches to the mile.
1/63360	...	...	...	1 inch to the mile.

Among these the two largest are chiefly useful to the field worker when complicated sites like a deserted village or excavations in towns have to be dealt with, and a precise relation to modern detail . . . hedges, houses, roads, and other structures . . . is required.

In the Archaeology Division the 6 inch scale is found to be the most convenient for keeping records of sites and finds in specific areas, but most people will probably find it rather large for direct use in the field. The new 2½ inch maps introduced since 1945 give practically 6 inch detail with the advantage that much more country is covered by one sheet, and this scale has been much appreciated by field workers in a number of subjects besides archaeology. As it is compiled from the 6 inch series it still tends to be unrevised where that scale requires revision. The last scale of direct use in the field is the 1 inch which is now up to date over the whole of the country in the 7th series. It enables the general characteristics of large areas to be appreciated easily and it carries a large amount of archaeological detail as well as such useful features as parish boundaries. The maps at the ½ inch scale are most useful for planning travel over wide areas.

The 2½ inch, 1 inch, and smaller scales can be had in black and white form which can be useful for planning distributions. Finally, Ordnance Survey period maps will help by giving a general view of the state of knowledge on the periods and subjects which have been treated in the series.

The discussion of field archaeology which follows has no strictly logical plan. In general it proceeds from earlier to later times, but the various types of site do not fall into convenient compartments on a chronological basis; some are exclusive to one period while others appear again and again. Thus while the subject will be treated period by period as far as possible, some things like linear earthworks, agriculture, trackways, etc. which do not respond to this will be dealt with separately at the end.

Finally, in this edition an attempt has been made to give more adequate treatment of the field problems of Scotland than was apparent in its earlier versions. The field archaeology of Scotland has distinctive features not always represented south of the Border, but all British archaeology is an insular phenomenon. Thus in this matter Scotland cannot be placed in a watertight compartment, and workers in any part of Britain should be ready to broaden the basis of their studies by having at least a general knowledge of what exists in all parts of the island.

WORK IN THE FIELD

General considerations

Field archaeology can only be practised on the ground, and the archaeologist who never has any mud on his boots is not likely to achieve very much. By the same token the Archaeology Division makes no complaint about dirt on the maps issued to its correspondents for field work. It is good evidence that they have been put to practical use. The best field archaeologists are born and seldom made, but good work can be done by anyone with a sense of history, good powers of observation, and plenty of common sense. It is very difficult to give written advice on field work since a little practical demonstration is worth more than much reading, but the attempt will be made.

There is an impression abroad today that field archaeology consists largely of digging, and hundreds flock to help in excavations who never give much thought to the means by which sites which are not fairly obvious are found. No one wishes to discourage these helpers, without whom little could be done, but excavation is often only the final test to which the patient work of the reconnoitring field archaeologist is put, and not the whole story.

The experienced field archaeologist knows that various factors which focus his interest on a given spot may exist quite apart from anything which may or may not be visible on the ground there. The complete absence of ground evidence is in no way conclusive against the existence of a site. There are many reasons why attention may be drawn to such a place, and they may operate singly or in various combinations. Local folk lore may preserve traditions about places which are found to be grounded in fact. Place name study is full of hints, and the frequency with which Roman villas have been found in the south of England in fields with the name of 'Chessels' is a case in point. Early documentary records such as land charters are a fruitful source of information about what men met with on the ground a thousand years ago when they were defining boundaries, and the names of the contemporary features on those boundaries can be very revealing, especially as they can often be followed up very accurately today. We read of heathen burials, old burys, hoar stones, etc. Early estate maps sometimes contain valuable hints about vanished features. Ploughmen notice black soil or strike buried foundations. An example of what may lead to the finding of a site is the case of the second long barrow of the pair at Giants' Hills, Skendleby, Lincolnshire. This had been very completely levelled long ago and in the process of ploughing a lot of chalk had been distributed locally over a ploughed field. This was not very apparent to the eye, but the partridges tended to gather in this part of the field because the ground was drier there than elsewhere. Local shooting parties had long noticed this and the following of this hint by a careful examination of the ground showed the faint lift of the former site of the barrow. Much work is being done today in connection with the supply of water and gas in country districts. As a result sections up to three or four feet deep are cut over great distances, and many completely buried and lost features belonging to the earlier countryside are cut through. Locally the digging of anti-tank traps in 1940 had the same effect.

The scope of this work does not permit the retailing of further examples of this kind of detective work—for such it is—but O. G. S. Crawford has much to say about it in his 'Archæology in the Field'. We must confine ourselves to describing what may come from the examination of the surface of the ground.

There are two main elements in what may be seen there. On the one hand there are the various signs of human activity revealed in earthwork and stonework, and on the other there is the debris of occupation in the form of flint work, pottery, metal objects, etc. If they combine together on a site they

greatly increase the chances of giving it a broadly correct interpretation without excavation, but when either one or the other is present alone they still require attention and can be very informative. 'Earthwork' need not always be the result of deliberate construction, but may be incidental to former human activity in the form of trackways cut deep into the surface by much use, or as the terraces and banks resulting from ancient cultivation.

The field worker should have a good general knowledge of flint working and of the different kinds of pottery likely to be met with in Great Britain before much useful work can be done on the ground. This is a tall order, but the knowledge can be gained progressively in various ways. Joining the local archaeological society or group, taking part in excavations, and so making contacts with others better informed is one; looking intelligently at the contents of museums is another, and various summer and week-end schools are now run in many places. Some Universities organise extra-mural lecturing and practical work in the field, while there are few areas where excavations are not in progress every year. The Council for British Archaeology (10, Bolton Gardens, London, S.W.7) issues an annual calendar giving details of all these events and opportunities. The normal process by which the amateur picks up knowledge may be described as one of general infiltration. Experience is the best teacher, and anyone can make a start by looking round the local countryside armed with the appropriate Ordnance Survey maps.

The use of air-photographs

We do not aim at providing full treatment of this subject. The first chapter of John Bradford's 'Ancient Landscapes; Studies in Field Archaeology' is the best available account of it today, and the examination of good air-photographic cover is the ideal preliminary to field work. It may reveal new sites and will make it possible to deal with known ones on the ground with a greater economy of effort. The fact that nothing appears on an air-photograph does not mean that nothing exists, for conditions of photography in relation to height, time of year, time of day, and the condition of the crops bring about great variations in what may be revealed, but any air-photograph is always worth examination.

The Ministry of Housing and Local Government and the Scottish Development Department respectively have now taken over the management and sale of the air-photographic cover of Great Britain made by the R.A.F. and formerly in their custody. Enquiries for England and Wales should be made to:

The Air Photography Officer,
Room II/4,
Ministry of Housing and Local Government,
Whitehall, S.W.1.

and for Scotland to:

The Air Photographs Officer,
Scottish Development Department,
York Buildings,
Queen Street,
Edinburgh 2.

They should state the sheet number and edition of the 1 inch map and the National Grid reference of the feature or area involved, and preferably be accompanied by a tracing at 1 inch scale which can be related to the National Grid. For England and Wales there should also be information about the kind of feature sought, so that cover can be selected with relation to height of photography, time of year, etc.; air photographs may only be examined at the Ministry by appointment and in special circumstances. In Scotland the cover itself may be inspected also by appointment, and photographs may be borrowed by bona fide students.

An additional local resource is the possession by some County Planning Officers and Public Libraries of considerable cover. In some cases this may be viewed, and enquiries about facilities should be addressed to such persons and places.

The only large body of air-photography which has been created by an expert observer with the object of picking up new sites and making the best of old ones comes from the work of Dr. J. K. S. St. Joseph as Curator of Air-photography at Cambridge University. Since 1945 he has made immense contributions in this field, and although he has not made a systematic coverage of the whole country the resources which he controls are large, and it is always worth while making enquiry at his office in Sidgwick Avenue, Cambridge, giving the National Grid reference of the area required. Private enthusiasts like Mr. Arnold Baker of Malvern also do excellent work from local flying clubs.

The question may be asked, can an air-photograph tell a lie? It can be very deceptive on occasion. There are, of course, the ordinary features which give inexperienced people the impression that antiquities exist where there are none.

Examples of this are the fungus rings which suggest barrow circles, and the various cropping patterns which can look like Roman camps and other regularly planned types of antiquity, but these are not the sort of deceptions to be considered here. There have been cases, however, when the most convincing-looking henge sites have appeared, and experienced people have hurried into the field to identify them on the ground. Two cases come to mind, one near Weybridge in Surrey, and the other in the Cotswolds. The Weybridge example proved to be a large circle of heavy concrete blocks much obscured by long grass. This was a mooring device for barrage balloons protecting a neighbouring aircraft factory during the last war. The other was a most impressive double circle of dark marks on an open field much after the style of Woodhenge as seen from the air. On the ground this proved to be a site recently occupied by a number of poultry houses which had been arranged in a circle for the convenience of feeding and servicing from a central point. When the houses and feeding troughs were removed the resultant dark marks were most deceptive. But instances of this kind are not common, and there are usually relationships to be seen with modern features which dispel the illusion of great age.

The following books may be consulted:—

- O. G. S. CRAWFORD and A. KEILLER: *Wessex from the Air*, Oxford, 1928.
J. S. P. BRADFORD: *Ancient landscapes; studies in field archæology*. G. Bell and Sons, London, 1957.
O. G. S. CRAWFORD: *Air survey and Archæology*, 2nd edition, 1928, Ordnance Survey Professional paper No. 7, H.M.S.O. (A pioneer work, long out of print).

Since 1945 Dr. J. K. S. St. Joseph has published a number of articles in the *Journal of Roman Studies* which illustrate his great extension of our knowledge of Roman Britain by the use of air-photography.

THE RECOGNITION OF ARCHÆOLOGICAL SITES ON THE GROUND

The answer to this question will depend on the physical state of the site. The varying circumstances likely to be met with can be placed in seven categories:—

1. arable land.
2. grassland, either natural or sown.
3. woodland and scrub.
4. heath, moorland, and sand.
5. water features.
6. towns and built-up areas.
7. mechanical excavations.

They will be considered in that order.

Arable land

Any cultivated land may have the durable relics of former human occupation scattered on its surface. These will consist chiefly of objects made of flint, stone, pottery, and metal. Organic materials such as wood, bone, horn, antler, leather, and woven fabrics depend upon special conditions for their survival, and these do not usually occur on the surface of the soil. Bone often survives quite well, especially in chalk and limestone country, but acid soil conditions will quickly destroy it and it will not survive in sand.

Much that is found on ploughed soils and in gardens is casual rubbish that has been included in manure. When manure has been carted out and spread for generations outside a country village or round a farm the rubbish in it will reflect the relatively simple life of country dwellers over many centuries. In the neighbourhood of long-established towns, however, a good deal of more exotic material may find its way to the fields with the refuse of the town. The miscellaneous character of the finds in such areas should be sufficient warning that the conditions are abnormal.

Scatters of worked flint are classic indications of early settlement. Completed implements will be much less common than the rubbish left behind by their manufacture which will consist of discarded flakes, cores, and chips. The age of a site of this kind cannot invariably be determined by the form of this rubbish because sometimes it may have forms which could be regarded as the intentionally-produced implements of other cultures. An example of this caused a lot of trouble at the flint-mining site of Grime's Graves where large trimming flakes struck off blocks of flint in Neolithic and Early Bronze Age times have a distinctly palæolithic appearance, and led to the earliest phase of this site being wrongly dated to that period. But such instances are not common.

Before doing any serious flint hunting workers should be sure that they can readily distinguish between flints which are humanly shaped and those whose form is produced by frost and other natural processes. Fields often abound with forms which, to the novice, should be implements, and it is discouraging to have a large haul rejected by the expert as no more than natural products. Flint sites will be more readily recognised by the novice where flint is not a natural occurrence in the soil.

The stone objects normally found, apart from scattered building material on Roman or later sites, are various palæolithic objects like hand-axes and choppers, microliths ('pygmy' flints), arrow and lance heads, flint scrapers, awls, stone and flint axes (both flake and polished), perforated stone maces

and axe-hammers, querns (stone of hand mills), and small objects like spindle-whorls and whetstones. Sometimes the keen observer will also find the quartzite pebbles highly polished on one side which have dropped out of the wooden mould-boards of ancient ploughs. The boards were studded with the pebbles to reduce wear.

Pottery of all ages may also be found. Here again field workers must get to know the characteristics of form, paste, and general appearance belonging to the pottery of different periods. The dating of featureless sherds, i.e. those without rim form or decoration, can be difficult under any conditions. Romano-British pottery will be the commonest class found within the area of Roman influence because of its durability and the widespread effects of the Romanising process in this period. It can occur in large quantities, and there are few areas in Southern Britain where a thorough search will fail to produce a few fragments. Mercifully it is easy to recognise.

Pottery from urn cemeteries of the Late Bronze Age, the Iron Age, the Roman period, and the pagan Anglo-Saxon phase may be turned up by ploughing, particularly when it is carried a little deeper than usual.

Metal objects can either be the result of casual losses or of deliberate concealment in the ground as in the case of hoards of bronze implements or of coins. Such finds are unpredictable. Scatters of Roman coins are often associated with spreads of Roman pottery and other rubbish to indicate occupation sites, but when found by themselves they may be no more than parts of a hoard which has been scattered by the plough.

Finds of 'pot-boilers' can be revealing. These are burnt stones and flint nodules which were produced in great quantities by the corn-parching process practised by ancient farmers and by other features of domestic economy like cooking. An occasional fire-cracked stone may be the result of couch-grass fires lit on the fields in recent times, but if they occur in large numbers a watch should be kept for other finds like pottery which will help to confirm the presence of a site. (See also below under Open-air cooking sites.)

There are certain general principles which affect arable land as a source of archaeological finds.

Land which has been ploughed for the first time is bound to show its content more clearly than that which has been cultivated for many years. The material in the ground will not have been scattered to any extent, and the original sites can thus be more easily located. Weathering also plays a big part in revealing the content of soil. When freshly ploughed a field, which is known to be normally prolific in worked flints, may show little, but after it has been worked over by wind, rain, and frost the contents of the surface soil will show up clearly. Searchers for 'pygmy' flints will know the importance of correct surface conditions, and old reports of Roman sites often mention how easily coins can be found on them after heavy rain.

Other aids in tracing sites on arable land are differences in soil colour and composition, and the variable growth of crops where there has been human occupation. For example, it is notable how many Roman sites have been found in fields called Blacklands or similar names implying a darker tinge of soil. This may be caused by the accumulated dirt of a long occupation, or by the burnt matter left after a building has been destroyed by fire. Often both causes combine to produce the effect. On chalky land the ploughing down of a burial mound or of the bank of an earthwork can produce an increased whiteness in that part of the field by raising the proportion of chalk in the topsoil. This should accord roughly with the shape and plan of the vanished feature. In country where stone is plentiful the same general effect can be produced by a local increase of the stone content of the soil where cairns or wall structures have been spread. The field name 'Chessels' in the south of

England has proved time and again to mark a Roman villa site, and it shows that early farmers noticed building stone, tiles, and tesserae from mosaic pavements on the surface of their ploughland there.

In silty lands of the type which occurs widely in the Fenland the course of ancient drainage ditches and field divisions can be seen as dark lines of soil caused by the peaty infilling of these once wet features. Such boundary ditches will also show up on other soils, but they will often not be so strikingly apparent on the ground even though they may be plain enough on air-photographs. Where huts built of wattle and daub have been burnt down their sites can be identified by the presence of lumps of burnt clay bearing the imprint of the wicker sides of the hut. The comparative redness of the burnt clay material often helps it to be seen against the surrounding darker soil.

Crops will grow more vigorously over the deeper soil provided by filled-in ditches and pits of various kinds. This will be most apparent in the late spring and early summer, particularly when there has been some degree of drought. These buried features may be recognised by the darker colour of the crop growing over them, by its greater height, or by a combination of both. Later in the season the greater height will be revealed once more by the tendency of the crop to be laid by wind and rain over the buried features while the rest remains standing.

Details of soil and crop coloration tend to come out clearly on air-photographs, and these will give decisive help in ground examination. Where many traces of ancient occupation are known to exist it is uneconomical to examine the ground without their aid. They bring out many features such as single post-holes, stockade lines, etc. which can seldom be seen on the ground.

Grassland

The degree of ease with which ancient sites can be recognised on grassland will depend on its nature. Most ancient grasslands will reveal their history without much trouble. Ground which has been laid down to grass, however, is essentially arable land with the disadvantage for the field worker that its surface cannot easily be examined for finds. Relief features which survive in old grassland will tend to have been smoothed away from sown grass by the ploughing process.

In all kinds of grassland the work of burrowing animals can provide clues to ancient human occupation. The ravages of myxomatosis have now drastically reduced the number of rabbits, and the farmer's gain has been the archaeologist's loss. Rabbits have a preference for deep dry soil in making their burrows, and these conditions are often provided by the silted-up ditches of earthworks, store pits, and other ancient disturbances of the soil in depth. Thus the general pattern of rabbit burrows over a piece of downland used often to be a fair index of the distribution of buried features due to human settlement, and may be so again. The soil thrown out of the burrows should be examined for pottery and other relics. Moles also reveal the content of the topsoil in their hills, and can be helpful on sown grassland when other indications are wanting. Badgers and foxes can also do the same.

Drought plays a large part in showing up the state of the soil under grass. Where buried foundations exist the grass reacts locally to shortage of water and becomes lighter in colour. The hard surface of a buried road can produce the same effect where it has become covered with grass. The sites of Roman and medieval buildings of various kinds have often been recovered by this means, and fairly precise details of their plan can be made out without excavation.

Another characteristic of grassland is the occurrence of relief features such as banks and ditches. These range from obvious things like the great linear earthworks down to slight terraces and banks remaining from ancient agriculture. These will always be more clearly traceable when the sun is low and

the smallest irregularities of the surface throw long shadows. Much use is made of this fact in air-photography, and a light snowfall may also emphasise relief by drifting against the slight banks and filling the hollows. On flat land flood conditions can have the same effect. The flooding must be slight and no more than is necessary to fill any ditches and hollows which may exist, but there can be no more decisive demonstration of the relief features of a site than comes from this condition.

The effect of drought on grass has been mentioned above, but under normal conditions of rainfall other plants can provide clues. Strong growths of nettles away from buildings should always be noted since this plant flourishes where there is much organic matter in the ground. A clump of nettles may only mark the site of a fairly recent manure heap, but it may also indicate the enrichment of an area due to ancient occupation.

The proton magnetometer is now giving good results in detecting the shape of buried ditches, pits, etc., but it is an expensive instrument. More than sixty years ago General Pitt Rivers and, more recently, Dr. E. Cecil Curwen, noticed that a rough approximation to the same result could be got in the chalk country by pounding the ground with a heavy mallet and noting the variations of resonance. Undisturbed chalk gives back a dull sound while there is a distinct ring over buried features. This method was used with success to rough out the position of various otherwise invisible features at the Trundle in West Sussex in 1929-30. It is not likely to be of much value off the chalk.

The use of a long steel probe also helps in finding hard features like buried foundations and road surfaces, and can also be useful in finding the edges of pits, but its use requires discretion. Any hard obstacle can prevent it from penetrating far, and it is only by a patient process of trial and error that a rough pattern of underground features will be made out. In places where there is much stone the probe is of doubtful value.

Woodland and scrub

These can be a great hindrance to the field archaeologist and will often obscure the details, and even the existence, of well-marked ground features. Winter is always a better time for field work than summer, and many sites can only be studied when leafage is at its lowest and brambles have died down.

Much will depend on the type of woodland. Beech woods are naturally clear of undergrowth, but coppices and neglected mixed woodlands can obscure everything. Today much land is being planted by the Forestry Commission and their vast stands of conifers are fatal to field work. It is important to try and anticipate the planting programme by a thorough examination of all the ground involved, not only to anticipate the growth of the tree cover but also to get ahead of the wide destruction caused among minor antiquities by the routing up of the ground by heavy machinery as a preliminary to planting.

Heath, moorland, and sand

The dense cover of bracken, gorse and brambles often found on heathland obscures its surface even in winter. The best time for a search is after a heath fire when the ground will be clear for a while. When wind and rain have cleared and settled the ash it may even be possible to find microliths. The same is true with moorland though here heather, peat and swampy areas will be the chief obstacles. In the last two thousand years peat has blanketed most of our moorland with a steady growth which has abolished woodlands from all the higher ground and buried not only the camping sites of the Mesolithic hunters, but also hut sites, stone-walled enclosures, ancient fields, stone clearance heaps, burial mounds, alignments of stones and many other relics of life on the uplands before the onset of less favourable weather in the early part of the first millennium B.C. This growth is now less active and in places the peat has

been widely removed for fuel, but the masking effect is still widespread. The Pennines, much of Wales, the moors of Devon and Cornwall and large tracts of Scotland are seriously affected.

The effect of a big moorland fire after prolonged dry weather can be striking, though in our climate it will not be a frequent occurrence. The peat cover will be reduced to a light ash which blows away and the true surface of the moor as Bronze Age man knew it will be revealed. Scatters of flint and pottery may be seen where they were discarded as rubbish, only otherwise to be found sporadically in peat diggings, and larger features like burial cairns appear at their true size standing on the old ground surface.

The number of antiquities surviving on moorland is often astonishing. This is due to the withdrawal of life to a lower level, the prevalence of stone as a material, and the absence of disturbance. Many are of no great individual importance but taken together they testify to great changes in the settlement pattern since prehistoric times.

There are many places in Britain where tracts of sand have overrun ground formerly occupied by human groups at many periods. Round the coast of Cornwall there are many such sites and they also occur in Wales at places like Merthyr Mawr, Kenfig and Newborough Warren. In Scotland the shores of Luce Bay in the South-west and the waste tracts of Tents Muir and the Culbin Sands are well known. Good examples in England are Risby Warren in North Lincolnshire and Kelling Heath in Norfolk. Strong winds blow the sands about and rain channels their surface so that from time to time buried land surfaces appear and much ancient material may be found exposed. But there are complications with sand. After the initial covering of a land surface by blown sand other people may squat on the sand at different periods and levels leaving hearths and scatters of rubbish. If the sand is frequently on the move there is a tendency for all the contained material at different levels to be sifted to the bottom by wind action so that objects of many periods will be found at a common level. Thus microliths, bronze axes, Roman pottery, medieval rubbish, and broken lemonade bottles can be found cheek by jowl and there is no stratification.

Water features

Streams, whether natural or artificial, can reveal much to the field archaeologist. Natural watercourses have attracted settlement at all times, whether in the form of dwelling sites near the bank or in other uses of the stream itself. Water can change its course and by cutting into neighbouring settlement sites can reveal them in section in its banks. It is therefore useful to examine the banks of streams, especially where erosion is in progress. Other evidence of nearby settlement may be seen in the form of drains debouching into the river. Care must be taken not to mistake modern field drains for earlier work, but Roman drainage features of this kind are usually quite distinctive. In any case a drain which is not obviously modern requires an explanation and may lead to the finding of an old building site.

The dredging of river beds can be very productive of miscellaneous finds and the material deposited on the bank should be looked over carefully after it has weathered. Most of the objects found will be casual losses, but concentrations of related material may point to the nearness of sites. Dredging also meets with various obstacles, usually in the form of old piles driven into the river bed. Sometimes these can belong to forgotten bridges like the large Roman bridge over the Trent found near Cromwell by Newark; others are the remains of fish weirs. Timber work of various kinds can belong to old mills, and nearby traces of old dams and other devices for impounding a head of water will sometimes confirm this diagnosis. There is also the possibility of finding

ancient boats. Most of our rivers have now been dredged to such an extent that few traces of structures are likely to remain in them, but casual finds will continue to appear and these can be surprising in their richness and interest.

Lakes and large pools can also have dwelling places associated with them. Small islands fairly close to the shore are always worth investigating if there is any chance that they may be artificial, and seasonal variations in level can reveal features like ancient causeways which are normally under water, besides exposing the pile work round crannogs, etc.

There is also the possibility that a bog or small lake may have received votive offerings. As in the case of Llyn Cerrig in Anglesey these may only be found when the water is drained away, but natural drought can play its part in showing what is hidden. An example of this was the revelation of the Mithraeum at Carrawburgh on Hadrian's Wall through the unusual shrinkage of peat in a dry summer and the emergence of some votive altars.

Towns and built-up areas

These occupy an unusually large amount of space in Great Britain and their archaeology is affected by a number of things seldom met with in the countryside. Where a town has grown up since the Industrial Revolution it will be mere chance if anything turns up on its site; any finds made will be, in fact, those of a piece of buried countryside or, at best, those of an earlier village or manor site. Many towns of old standing have their beginnings in the Roman period, and most of those which exist today had made some growth before the end of the Anglo-Saxon period. When a site has been occupied by a town for a long time there will usually be a large accumulation of made ground under the latest buildings, and this may attain a thickness of as much as twenty feet under favourable conditions. Fire disasters, quite common in earlier times, accelerate the process of soil growth, and the filthy condition of medieval towns with their rubbish-encumbered streets, often close pent within a defensive wall, did much to make soil. There was also the frequent levelling of original ground features by filling in hollows to make more ground available for building. Until the end of the 18th century, however, the practice of making deep basements and cellars was not widespread so that soil which lay under the houses preserved a fairly representative stratification of the successive phases of the town's life. Today, in a town which has an active development, it is often a question whether any significant proportion of the subsoil containing the town's archaeology survives at all. London may serve as an example. Here in the City the Roman level has been broken through and removed by later construction to such an extent that the general plan of the Roman town has only been recovered by the patient piecing together of many disjointed items surviving here and there from once continuous features. Large features like earlier lines of defence by bank, wall, and ditch may have been completely levelled down, but they often survive sufficiently to cause cracks in buildings erected over them, either through differential settlement into ditches which, though filled, do not provide a firm foundation, or by settlement over resistant features like the foundations of a town wall. This subject will be mentioned further in the section on Roman towns below.

Any deep disturbance of the site of an old town should be watched, and the sections revealed should be studied by the collection of relics from carefully-noted points on a measured and drawn record. Foundations whether of stone or brick, or implied by sleeper trenches remaining from wooden buildings, should be planned and their horizontal and vertical relationships noted along with associated finds. Wells will normally be a common feature . . . usually shallow where a town stands on gravel . . . and their contents should be recovered. The same holds good for the numerous rubbish and cess pits which will be found. Old street lines may also appear as well as early sewers and

relics of water supply like wooden water pipes. It may be possible to relate layers of burnt matter to known and dated destructions of the town by fire, and a good case of this is the evident appearance under London of the destruction of the first Roman town by Boudicca's tribesmen.

These are counsels of perfection. Contractors do not always welcome the presence of watchers because of their liability to delay the work, and in any case modern mechanical methods of excavation are very destructive. But it is remarkable what a little tact will still do.

Finally, the effective study of a town as shown by its subsoil depends a great deal on knowledge of Roman, Anglo-Saxon, medieval, and early modern pottery forms. This has received a great stimulus because the destructions of the late war have given unusual opportunities for the collection of material and the study of crucial areas never available before. But even when a field worker has no specialised knowledge the collection of this kind of evidence faithfully performed with careful notes of sitings and stratigraphical sequence will be valuable because it can always be interpreted later by a competent person. Some record is a great deal better than none. In the absence of a full knowledge of the sequence of post-medieval pottery form clay tobacco pipes are beginning to provide a fair index of the relative date of more recent deposits.

Mechanical excavation

Today the widespread use of mechanical earth-moving and gravel-winning devices has brought a new factor into field archaeology. In the old days of pick and shovel the lower rate of work and the experience of workmen in noting changes in the consistency of soil as they dug often drew attention to sites as well as favouring the rescue of a good many buried objects. In the old fashioned gravel pits the diggers got to know palæoliths when they saw them (particularly when they were known to be saleable) so that the geological setting of these implements could often be observed with precision. Today the machine working of flooded gravel pits has ended all this and the best that can be hoped for is to pick implements off the gravel heaps before they go through the crushers and graders. There is no possibility of studying their position in the ground in the average commercial pit.

This is nearly all loss, but the use of earth-moving machinery has its compensations. Apart from its use in removing large masses of topsoil and shifting spoil heaps during archaeological excavations the ordinary commercial use of these machines can reveal much unsuspected archaeology. Undoubtedly they destroy a great deal, but when a grader is removing topsoil as a preliminary to the extension of a chalk pit it may reveal ditches, post-holes, beam slots, rubbish pits and many other significant disturbances of the underlying chalk. Normally these would only have been found piecemeal and by chance whereas under the new conditions the relationships of whole series of features can become apparent very quickly. There will be some loss of small finds in the topsoil, but this is not too great a price to pay for what comes to light so easily.

In other soils besides that overlying chalk the same can occur, but here the smearing effect of the machine's work will tend to confuse the changes of colour and consistency which reveal ancient features. But the point is that a keen observer can see enough to give him a clue which can be followed up as in the case of the finding of the bow-sided Late Saxon house at Buckden mentioned below. (See p. 104.) Thus it is always worth while to watch work of this kind even though it may not always be so easy to induce contractors to pause while suspicions about what is being revealed are tested. Field workers must always be alive to consider possible good and bad effects of these new methods as they arise.

Pitfalls for the unwary

People are much better informed about archæology today than they were even ten years ago, but it is still necessary to give some warnings about common mistakes made in field work.

The most obvious sources of error are natural objects which are mistaken for human work, architectural follies, sham castles, and genuine antiquities which have been re-erected away from their original sites.

There are various natural geological formations and rocks which can be mistaken for antiquities. In some places tabular rock formations give rise to flat-topped hills with slight cliffs round the edges of their summits. These are sometimes mistaken for the artificial defences of hill forts, and well below the tops of the hills these outcrops can produce terraced effects which have been taken for terraces of ancient fields. Sometimes the occurrence of a harder stratum of rock at the top of a hill will weather into a hog-backed rather than a tabular form which gives the impression that the hill is crowned by an artificial mound. Several striking examples of this kind occur in the southern part of the Lincolnshire Wolds.

The mounds of glacial rubbish left behind by the retreat of the ice in the northern parts of Britain can often look like barrows or castle mounds. Other deceptive features in the North are the groups of small cairns of stones which are mistaken for burial places when they are merely stones gathered off fields by early farmers, and the troublesome mounds on the peat moors which may be thought to cover graves but are only the weathered-down remains of peat stacks which have never been carted home. Before geology became a science many odd rock formations led the early antiquary astray. A classic example of this is at Brimham Rocks near Ripon where a fantastically weathered group of outcrops of millstone grit led Major Harman Rooke to communicate elaborate reports of Druid altars, temples, etc. to the Society of Antiquaries in the later 18th century. The Cheesewring near Liskeard in Cornwall is another example of this kind of thing as well as the logans or natural rocking-stones found in the same region. Large glacial boulders and erratic blocks are sometimes the subject of folk tales, but this does not make them into genuine antiquities.

Today the architectural follies and sham castles should deceive no one. Most of them are part of landscape gardening and the contrivance of pleasing vistas in the taste of the 18th and early 19th centuries. Sometimes old materials have been used in them which have been taken from genuine monastic ruins and the like. As a result there have been occasional finds of interesting early sculptures built into mock ruins or piled on rockeries.

There is a more dangerous class of false antiquity typified by the genuine megalithic monument removed from the Mont de la Ville at St. Helier in Jersey in the late 18th century and re-erected at Park Place, Henley-on-Thames. In its original place nothing could have been more genuine. Fortunately all these frauds are well known.

The National Eisteddfodau of Wales also produce their quota of false antiquities in the form of stone circles which are erected at the places where the meetings are held to act as settings for the ceremonies. Here again no one is likely to be deceived.

See:

G. E. DANIEL: *Some Megalithic Follies*, *Ant.*, xxxiii, 1959, 282-284.

The essentials of a good field record

They are as follows:—...

1. an accurate National Grid reference of the site with its parish and county
2. sufficient indications of general size and character.

3. geographical setting.

4. a photograph, if this is possible and appropriate.

5. a selection of the flints, pottery, or other finds which may occur on the site.

To go over these in more detail:

1. An accurate location of the position of a site or feature is a valuable part of any record which will be seriously defective without it; to this should be added the parish and the county. Archaeology in Britain has always been much organised locally by counties and it is convenient to have this detail. In the last resort it does not matter if the finder is not very successful in his diagnosis of the precise character and age of the site, but if its position is accurately known it can be checked by those better able to judge. The supply of accurate position is a prime service.

2. It will be sufficient if the finder gives as accurate an account of the character and dimensions of a site as he is able. A careful survey will greatly increase the value of the record with a drawn plan, but not all can do this, and general indications got from pacing and a rough estimate of heights will be enough.

3. It is desirable to give a general indication of height above sea level, general geological, vegetational, and soil background, i.e. greensand, chalk, boulder clay, silt, millstone grit, limestone, clay-with-flints, dense coppice, peat moorland, etc., as well as relation to present and probable ancient water supply. The relative importance of these different kinds of information will depend on the character of the site, but the supply of all or some of them is desirable.

4. A photograph, with scale if possible, is an obvious form of record. A human figure will often be sufficient scale for most purposes. Many sites are far from photogenic, if capable of being usefully photographed at all, but photography should always be considered.

5. How much is brought away depends on the site. It can be a great embarrassment to be possessed of quantities of small packets of material, and the field worker will learn from experience what is important for diagnostic purposes. If a lot of specimens are collected they will probably soon cease to have any scientific value unless they are carefully isolated in small boxes and marked with their find spots.

To repeat, *it is very important to locate sites correctly*, and this can only be done with the aid of the Ordnance Survey map of suitable scale. For extensive sites a 1 inch map will serve at a pinch, but for more accurate work with pin-point sites the 2½ inch is the smallest which can be really effective.

Where a site is large it is sufficient to give the National Grid reference to its mid point 'centering at SP 175 943' or wherever it may be. If sites have an 'area' character like systems of ancient fields the National Grid references to its limiting points should be given.

On moorlands there may be much difficulty in locating a point because there are no readily recognisable points of reference. Work of this kind is often made more difficult by the prevalence of hill fog. It can be helpful to note the aspect of a site standing in featureless but relatively broken country e.g. that it stands on a south-west facing slope. In some of the remoter parts of Scotland the absence of contours and detail on the older 6 inch O.S. maps and the fact that they are not always accurate by modern standards has been a trial, but they are rapidly being replaced by a newly surveyed series based on air-photography. Difficult sites on featureless wastes are normally fixed by instrumental means with reference to distant points on the horizon or, failing these, to notable rocks and other local features. Where plotting sites on air-photographs is concerned distinctive patterns of vegetation can help, but as

these will change in a year or two they are only useful in getting an initial fix. The only comfort which can be offered to the amateur is that the professional often finds himself in trouble in these areas, and can only achieve an accurate result with much contrivance.

Much has been written on field archaeology in Britain since Leland and Camden showed the way in the sixteenth century, and many more books continue to appear. We shall make no attempt to list any of the older works but will concern ourselves almost entirely with books published in this century. This will pass over a great deal of valuable work in silence but the scope of this work makes it unavoidable. Before dealing with individual works something must be said about the series of official and quasi-official works covering the country county by county.

The first is the *Victoria History of the Counties of England*. This great work was begun at the end of the nineteenth century and has made much progress though it is still far from complete. Although it is an admirable authority for all aspects of county history its success with archaeology was only moderate in its early days. The first improvement came when Professor Haverfield began to write the articles on Roman archaeology for various counties, and since then this side of the work has never looked back. Pre-history and Anglo-Saxon archaeology also lagged behind for a long time, but a vast improvement has been made with the recent publication of Volume I of Wiltshire containing an exhaustive treatment of the archaeology of the county. It is always worth looking to see what the *Victoria County History* has to say on any area, but due regard must be had to the date of publication in assessing its value. It is normally factually correct as far as it goes.

The other great source is the *County Inventories of the Royal Commissions on Ancient and Historical Monuments in England, Scotland, and Wales*. The compilation of these began at various dates in the first decade of this century. Comparatively few of the counties of England have yet been covered but there are inventories on a higher proportion of countries in Scotland and Wales. The reason for this discrepancy is that the average county in England contains a vast amount of matter for treatment by the Commission and progress is correspondingly slow. In Scotland and Wales many of the earlier inventories are now less than adequate and in the case of Wales all published before that on Anglesey (1937) should be used with caution. Before 1940 the Commissions did not normally give field archaeology such thorough treatment as they do now and they concentrated more on architectural antiquities. Since 1945 this has changed and Royal Commission inventories published since then may be regarded as the most authoritative sources for the position at the time of publication. Attention may be drawn to the Inventories of Dorset West, Roxburghshire, Cernarvonshire East and Central and, slightly older in date, Anglesey and Westmorland. These contain a vast amount of information about lesser field antiquities of the hut-group and homestead class and no further notice will be given of this fact in the bibliographies which follow the individual treatment of the different classes of these monuments below. A number of special volumes on historic towns have also appeared in recent years. The Commissions cannot cover the ground very rapidly; a great deal remains to be done and earlier inventories require overhaul to bring them to present standards of knowledge. Once an inventory is published there is no prospect of early revision. This is not so important in the case of architectural features, but with the present rate of new archaeological discovery and comprehension it limits the value of published inventories increasingly as time passes. Subject to these provisos the work and publication of the Commissions are of the highest value and importance.

There are also the following books dealing with various more general aspects of field archaeology:—

General principles

GENERAL PITT-RIVERS: *Excavations in Cranborne Chase*.

- J. P. WILLIAMS-FREEMAN: *An introduction to field archaeology as illustrated by Hampshire*, London 1915.
- O. G. S. CRAWFORD: *Man and his Past*, Oxford, 1922.
- : *Archæology in the Field*, Phoenix House Ltd., London, 1953.
- SIR CYRIL FOX: *The Archaeology of the Cambridge Region*, 2nd edition, Cambridge, 1949.
- SIR CYRIL FOX and Miss L. F. CHITTY: *The Personality of Britain*, 3rd edition, National Museum of Wales, Cardiff, 1938.
- KATHLEEN M. KENYON: *Beginning in Archaeology*, Phoenix House Ltd., London, 1961.
- R. J. C. ATKINSON: *Field Archaeology*, 2nd Edition, Methuen, London, 1953.
- J. G. D. CLARK: *Archæology and Society*, 3rd edition, 1960.
- G. E. DANIEL: *The Idea of Prehistory*, (New Thinkers' Library), C. A. Watts and Co. Ltd., London, 1962.
- M. W. BERESFORD: *History on the Ground, six studies in maps and landscapes*, London, 1957.

The country as a whole

- J. G. D. CLARK: *Prehistoric England*, Batsford, 1962.
- JAQUETTA and CHRISTOPHER HAWKES: *Prehistoric Britain*, Penguin Books, 1958.
- NICHOLAS THOMAS: *A Guide to Prehistoric England*, Batsford, London, 1960.
- STUART PIGGOTT: *The Neolithic Cultures of the British Isles*, Cambridge, 1954.
- V. GORDON CHILDE: *The Prehistoric Communities of the British Isles*, London, 1940.

Regional

- R. R. CLARKE: *East Anglia*, Thames and Hudson, London, 1960.
- G. J. COPLEY: *An Archaeology of South-east England*.
- E. CECIL CURWEN: *The Archaeology of Sussex*, London, 1937.
- H. DUDLEY: *Early days in North-west Lincolnshire*, Caldicott, Scunthorpe, 1949.
- FRANK ELGEE: *Early Man in North-east Yorkshire*, Bellows, Gloucester, 1930.
- F. and H. ELGEE: *The Archaeology of Yorkshire*, Methuen, London, 1933.
- L. V. GRINSELL: *The Archaeology of Wessex*, Methuen, London, 1958.
- H. O'N. HENCKEN: *The Archaeology of Cornwall and Scilly*, Methuen, London, 1932.
- R. F. JESSUP: *The Archaeology of Kent*, Methuen, London.
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ANTIQUITIES BELONGING TO PRE-ROMAN TIMES

PALÆOLITHIC SITES AND MATERIAL

The study of palæolithic man is a highly specialised subject involving, among many other things, a good knowledge of geology, and no attempt can be made to cover it adequately here. We are only concerned with finding the traces of his life in Great Britain and there are limitations on the area in which these traces will be found. Nothing which can be securely regarded as belonging to the Lower Palæolithic phase has yet been found north of Yorkshire, and the way in which this material rapidly thins out from south to north suggests that its limit is reached there. For the Upper Palæolithic, however, the northern range is a little higher, and it may extend into the Lowlands of Scotland.

Our concern is to show how Palæolithic sites and material may be found in the field and this reduces the subject to two headings,

1. Caves.
2. Open sites.

and they will be dealt with in that order.

Caves

These are important because they serve to localise occupation sites belonging to Palæolithic man. Our early ancestors certainly did not live only in caves, for cave life was the exception rather than the rule, but they are the only *certain* places where they *may* have lived and so claim attention. Nothing like the glories of the caves of the Dordogne in France may be expected here for in Upper Palæolithic times Britain was a marginal land close to the ice and right on the outskirts of the life of the time.

Considerable physical changes will certainly have taken place in any cave since it was occupied by Palæolithic man. The commonest will be the retreat of the entrance through falls of rock which may block or otherwise obscure it, and the growth of layers of stalagmite (lime deposit) or the formation of breccia (naturally concreted masses of stone) over the ancient floor on which men once lived. Large quantities of hill wash and other water-borne material also find their way into caves and choke them.

Any finds of evidence of occupation of caves without excavation will be rare and will usually be due to some disturbance of the deposits at the entrance by burrowing animals which have dug down to the old occupation levels and thrown out worked flints and mineralised bone. Commonly the traces of any occupation will be buried under a considerable depth of cave deposits. These often contain large boulders fallen from the roof which can make excavation very difficult. Local circumstances vary, but the area containing most of any surviving material will usually be in the entrance or even in front of it. An exception may be burials which are sometimes found some way inside.

All cave occupations known in Britain belong to the Upper Palæolithic (later) phase of the period, and it is common for other traces of human habitation to occur in the upper layers and to cover all periods down to the present day. Good examples of occupied caves are those at Creswell Crags in Nottinghamshire, Gough's Cave in Cheddar Gorge, Aveline's Hole, also in Mendip, and Kent's Cavern at Torquay.

Cave excavations in Britain are liable to be both arduous and unrewarding. They are best left to specialists, and the part of the field worker is to report the finding of new caves which give promise of results.

Some of the most important caves and rock shelters containing Palæolithic material are probably still undiscovered. Most work has been done in caves which are obvious enough, but others must exist with their entrances completely

masked by rock falls and by accumulations of detritus. Careful examination of the ground at the foot of declivities will sometimes show signs of a buried arch or concealed overhang, and examples of this can be seen at various points in Cheddar Gorge.

Finally a distinction must be made between the normal type of exit cave and pot holes. The latter are holes and fissures with more or less vertical descents into the ground. Although they are of great interest to cave explorers they are obviously unsuitable for habitation. The case of the Windy Pits near Helmsley in North Yorkshire has shown that they are not always archaeologically sterile, but the remains found in them are not obviously those of occupation.

2. *Open sites*

The second and much commoner class of site is usually revealed by some disturbance of the land surface like gravel digging and quarrying. Palaeolithic implements may also be found on the natural surface of the ground, but in all cases the significance of the occurrence is governed by geological factors like the presence of river terraces, hill-top gravels, and so forth.

So far the majority of Palaeolithic implements found on open sites has belonged to the older phases of the period. Implements like hand axes are rarely found where Palaeolithic man dropped them, and such cases will only be observed in man-made sections in the ground which reveal ancient land surfaces. Most implements are derived, i.e. removed by natural agencies like water far from the spot where they were originally made and lost. They often show the effects of prolonged rolling in the beds of ancient torrents and other natural forms of wear.

A word of warning is necessary about the modern dispersal of implements as ballast and gravel. Material from a gravel pit is often moved many miles from its place or origin. Thus fine implements have been picked up among the ballast on railway tracks far from any place where they are likely to occur naturally. Stone heaps placed by the side of roads for road mending can also yield good specimens, though these are unlikely to be so far from their place of origin as the railway examples. When such finds are made enquiry from local authorities can sometimes establish the source from which the material was dug. Modern methods of gravel getting have seriously reduced the chances of finding Palaeolithic material. When gravel was dug by hand implements were often noticed and saved, but mechanical digging and sorting in pits which are frequently flooded has put an end to this.

Space does not permit a detailed description of the classic open sites where palaeoliths occur, but the gravel terraces and brickearths of the Middle and Lower Thames Valley, those belonging to the ancient Solent river in Hampshire, and many East Anglian sites are the most famous. Recent field work has shown that palaeoliths occur further north in Britain than had been supposed, and well north of the Trent Valley.

Any genuine association of fossil animal bones and teeth with palaeoliths is of first-class importance and should be reported. A good knowledge of recent geology is essential to the intelligent pursuit of the palaeolith in the field.

So far we have spoken of the evidences of Lower Palaeolithic man in Britain, which are so ancient as to be geological, but there is also the question of what may be found belonging to that later stage of Palaeolithic times covering the long period from the final end of the last Ice Age down to the emergence of the full Mesolithic phase. From the period of the Magdalenians who were hunting and making their wonderful cave paintings in France round about 20,000 B.C. and for a long time after there is very little in Britain because all but the most southerly part of the country was still either under or very close to the ice. A few typical Magdalenian objects have been found in Mendip

caves, but there are no known cave paintings and this area must have been very near the outermost fringe of any human activity. As the climate slowly improved occasional finds of worked flints of Upper Palaeolithic type on the surface at various points in East Anglia and North Kent show that Britain, still joined to the mainland of Europe, was visited by the hunting peoples whose summer camps have been found and studied in Denmark and North Germany. There were two main phases of this advance after the retreating ice into the North which centre round the two dates 15,000 B.C. (Hamburgian) and 9,000 B.C. (Ahrensburgian), and the only certain site here which gives evidence of some degree of settlement belongs in general to the latter. This was recently recognised and excavated on Hengistbury Head near Bournemouth. It was a poor affair, but there is no doubt that hunters whose flint implements may be generally matched with those of the Lyngby-Ahrensburg reindeer hunters of the North had camped there for a while to make backed blades, tanged points, and burins for their equipment. The recognition of these types requires experience. In this particular case the site was traced because an earlier collector had picked up a few of these characteristic objects on the surface and had made a careful note of where he found them. After his death his collection was examined by a more expert eye which saw the Upper Palaeolithic character of this material, and so it was traced back to its find spot and definite evidence of the site was found by excavation. This is an object lesson of the usefulness of making a careful record of find spots even when the nature of the site is not fully understood.

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THE MESOLITHIC PERIOD

As late as 1920 our knowledge of this phase of British prehistory was still slight. Hunting for 'pygmy' flints on numerous sites, chiefly in the south-east of England and the Pennines was almost the only practical expression of interest in it. Then came the realisation that there was an important intervening cultural phase rooted in Upper Palaeolithic tradition between the close of the last Ice Age and the rise of the Neolithic cultures. This formed the link between our remote ancestors and relatively modern times. It was correctly surmised that Mesolithic folk were hunters, fishers, and food gatherers living in small groups in close relation to natural food resources, and already endowed with great skill in securing their livelihood. Research in the Baltic lands brought out the fact that their pattern of life had many analogies with that of the Eskimo. The classic site at Maglemose in the Danish island of Zealand was excavated in 1900 and hints of the existence of outposts of the same culture in Britain were noted soon after. In 1903 and 1906 isolated objects belonging to the Maglemose culture were found in the Holderness district of Yorkshire, and these were followed by other finds near Newbury in Berkshire in 1920, at

Kelling in Norfolk, Royston in Cambridgeshire, Broxbourne in Hertfordshire, and in the Thames at London. It was shown that not only were Maglemosian bone and antler objects to be found in Britain, but also closely comparable flint industries. The dramatic discovery of a typical barbed harpoon in fresh-water peat dredged up from the bottom of the North Sea supplied the link between the Baltic area and Britain by showing that Maglemosian hunters had ranged across the bed of the North Sea when it was still for the most part a great fen.

At the same time many surface sites had been found yielding 'pygmy' flints of the type known as Tardenoisian from the site at Fère-en-Tardenois in Northern France. Most of these were on the Greensand areas of South-east England, but they also occurred in Lincolnshire, East Anglia, the Pennines, and many other places. It should be explained that these tiny worked flint blades of varying form were used as barbs set in hunting weapons otherwise made of wood, antler, and bone.

Space does not permit a full discussion of all these finds, but it is important to know that the flint work of the two basic Mesolithic cultures, the Maglemosian and the Tardenoisian, show marked signs of fusion, for England was becoming an island and land connections with the Continental areas from which these cultures had come was being broken. The whole matter has been dealt with by Professor Grahame Clark in two important books.

Two recent finds have thrown more light on the matter. At Star Carr near Seamer, on the shore line of the great lake which once filled the Vale of Pickering in Yorkshire, a major Maglemosian site has been found buried in peat under conditions which preserve the wood and bone elements of the culture very well. This ties up with the earlier finds in Holderness close by, and it is now clear that this area of Yorkshire must contain a number of these sites, though local surface conditions may not always favour their recognition. The application of the techniques of pollen analysis and Carbon 14 investigation have shown conclusively that the site belongs to the Boreal climatic phase which succeeded the last Ice Age, and that it may be dated with some confidence to 8,000-7,500 B.C. In the southern area a find has been made on the Greensand in Surrey at Abinger where, under the surface of a field which has long been known as a source of many worked flints, a trench type of dwelling has been found cut in the Greensand rock. This presents a big contrast to the Seamer site where the hunters lived on a sort of rough platform of felled birch trees and other litter thrown out over the reed swamp at the edge of the lake. This occupation may have been seasonal only, and it is too early to say what kind of more permanent dwelling the Seamer folk may have had.

How may Mesolithic sites be found in the field?

No positive rules can be laid down, but the following suggestions may be of value.

The majority of sites belonging to the Maglemosian background have been found where swampy and lacustrine conditions have prevailed. This does not mean that their former existence is necessarily very obvious today. Unless some modern disturbance such as peat-cutting or the digging of drainage channels takes place, the chances of finding typical objects are not great. This applies particularly to the bone, antler, and wooden objects which are unlikely to survive unless the conditions are very favourable. Flint and stone are almost unaffected by the lapse of time, and the first hint of a site will probably come through the scatter of typical Maglemosian flints in a naturally promising place. This was the type of clue which revealed the Seamer site where dredgings from an adjacent drainage channel contained flints, but the Holderness harpoons would never have been found without deep cuttings for other

purposes into old lake beds. An eroding cliff face like that along the Holderness coast can also throw out typical material, and the Seamer find should intensify the examination of the sites of many earlier casual finds.

In favoured places the Tardenoisian type of site occurs quite plentifully. Its association with sand exposures of various kinds is very striking, though not invariable. The presence of a good water supply and a sunny sheltered outlook greatly increase the chances of a find. Surrey, Kent, and Sussex supply many examples of this favourable combination, and the largest number of sites occur here, particularly in the neighbourhood of Horsham. But other parts of the country have their share, and probably the most famous single site is Risby Warren at Scunthorpe in North Lincolnshire. There have been many finds in the Pennines and the North York Moors wherever the Mesolithic ground surface is not masked by peat. Another remarkable spot where the conjunction of a sandy surface with water and a good outlook seems to have been attractive is Hall Hill at West Keal overlooking the East Fen north of Boston. Later settlers often follow on, and it is common to find the Mesolithic material well mixed with flint, pottery, and other relics belonging to most early periods. A striking example of this where the rubbish of each successive occupation was neatly stratified under the peat abutting on a sandhill protruding from a marsh was provided at Peacock's Farm, Shippea Hill, Cambridgeshire.

It is in the Mesolithic period that men seem first to have begun to colonise Scotland. The best known group are those who carried on a hunting, fishing, and food-collecting life on the west coast in Atlantic times when the sea encroached further on the land than today and produced an old raised beach which can be seen in many places about 25 feet above the present high-water mark. Middens full of shell-fish remains and other animal rubbish can be found along the seashore where these people camped in the open. This phase of life is known as the Obanian because its best known sites have been found in the neighbourhood of Oban at MacArthur and Druim Vargie Caves while good examples of the open type of settlement can be seen on the island of Oronsay. Besides gathering food along the shore these people hunted with flat harpoons of red-deer antler and bone; they caught fish and the rest of their surviving equipment consists of stone pounders and polishers along with graveurs and fabricators of indifferent quality made from flint, chert, and quartzite. There are no certain traces of dwellings.

The Obanians are found on the west coast and in the islands; there are also a few traces of the Northern Irish Mesolithic culture known as the Larnian in Kintyre. Tardenoisian microliths have also been found in many parts of Scotland but seem to have been left by wandering hunting parties.

Most of the Mesolithic cultures current in North-western Europe seem to be represented in a small way in Scotland, those with an ultimate French origin predominating in the west. A few indications of the Baltic cultures occur in Eastern Scotland. While England differs from Scotland at this period in having no known coastal middens, chiefly because the North Sea was not yet formed, there are no other marked points of difference in the way in which mesolithic material will be met with in the field in the two regions.

In both cases, of course, it must be remembered that flint remained a standard material for long after the Mesolithic period and that some 'mesolithic' types of implement continued in use; it follows that isolated finds of them may indicate Neolithic or even later settlement.

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FIELD MONUMENTS OF THE NEOLITHIC AND NEOLITHIC-EARLY BRONZE TRANSITION PERIODS

While there are many sites in Britain where evidence of Palaeolithic and Mesolithic life may be found, no monuments exist which can be attributed to those remote times. It is obvious that a more developed and settled way of life was necessary before such things could be. The Neolithic phase of culture which probably had its beginnings in Britain some time between 4,000 and 3,000 B.C. is the first one of which plain signs remain on the ground today. Ten years ago it seemed unlikely that this phase could have its origins much before 2,500 B.C., but the use of new dating techniques like Carbon 14 determinations has shown that elaborate funeral monuments were being set up here between 3,000 and 2,500 B.C., and it can hardly be doubted that the Neolithic way of life with its new techniques of agriculture and stock-raising and its early beginnings of trade must have had its beginning here well before 3,000 B.C. Our Neolithic immigrants came from the Continent, and in the countries there which are the obvious points of departure for Britain early Neolithic sites with dates well before 4,000 B.C. continue to be found. At the other end of its range the phase was not fully over till as late as, or even later than, 1,500 B.C. so that it has a probable duration of nearly 2,500 years. By this time it was rapidly becoming affected by new immigrants bringing with them the first knowledge of metals and the Bronze Age was beginning. The original Neolithic settlers merged to a considerable extent with those they supplanted. The old Mesolithic population of hunters, fishers, and food-gatherers already in this country was absorbed to an extent which gave rise to groups whose material equipment reflects both cultures.

The surviving monuments of the Neolithic period and of the Neolithic-Early Bronze Age phase which followed it are amongst the most complex and striking visible monuments in Britain today. Most of them are concerned with religion and the disposal of the dead.

The principal classes of monuments to be considered are

1. Long barrows and mortuary enclosures.
2. Chambered long and round barrows and cairns.
3. 'Causewayed camps'.
4. Cursuses.
5. 'Henge' monuments.
6. Stone circles.
7. Standing stones.
8. Stone rows and stone avenues.

The more domestic traces of Neolithic life will be dealt with below under the heading of ancient dwellings. (See pp. 54-5.)

LONG BARROWS AND LONG MORTUARY ENCLOSURES

The long barrow disputes with the 'causewayed camp' the distinction of being the oldest form of field monument known in Britain. (Chambered long barrows and cairns are treated separately below.) The typical long barrow of the South and East is a long mound of earth or chalk rubble, normally somewhat higher and broader at one end when it is in a fair state of preservation, though the great age of these monuments makes them liable to denudation and damage which can alter their appearance very much. Their usual length is between 100 and 150 feet, but some are as long as 300 feet. The height of the higher end is generally about 6 feet, but it may be more; in typical examples the mound slopes gradually away to the lower end which often merges without any marked break into the surface of the ground.

Long barrows are the collective burial places of the Neolithic dead, and there is good reason for regarding them as family graves. The oldest may go back to before 3,000 B.C., and the latest may have been built soon after 2,000 B.C., but, as will be shown later, their full range in time is still undetermined. All the present evidence suggests that they are a feature of the Western (Windmill Hill) phase of Neolithic culture.

In stoneless country they consist entirely of earth and chalk rubble and are flanked on each side by a broad ditch parallel with the length of the mound; flanking ditches can continue round both ends of the mound, or the continuity of the ditch may be broken by one or more small causeways, but as seen in the field these details are usually obscured. Today, when most long barrows which can be readily recognised by ground examination are probably known, the ditch has special importance in revealing the site of destroyed examples. A mound can be, and often is, destroyed, but the ditches will survive though completely filled, and will show clearly on an air-photograph as a crop-mark with a characteristic club or wedge-shaped plan.

Another feature of long barrows is their tendency to be orientated with their higher and broader end to the east. Variations to the north and south are common, but a long barrow with its axis due north and south is unknown.

Excavation has shown that earthen long barrows contain timber features in the form of mortuary houses, wooden revetments, etc., but none of these can be seen by ground inspection. The rite of the disposal of the dead can also vary. Most of the burials were by inhumation, and sometimes the remains of as many as fifty persons have been found in one barrow, but usually a proportion of these remains belong to individuals who died some time before the building of the barrow. They are represented by more or less complete parcels of bones which have been reserved until a suitable occasion arose to inter them with other relatives who had just died. We do not know what determined the time to build a long barrow, but the recognition that the long barrows were themselves erected on the sites of formal structures representing houses suggests that the reserved bodies were in fact stored there.

In Britain the rite of cremation in long barrows is practically confined to the North of England and Wiltshire. On the Wolds of East Yorkshire there was a group of barrows in which the bodies of the dead were burnt in a kind of crematorium which was contrived along the eastern half of the central axis of the barrow. There is much that is uncertain about the details of this, and since all known examples have been dug at one time or another by Greenwell and Mortimer we have to rely on their accounts. It now appears from a re-examination of the Willerby Wold long barrow that Greenwell's excavation here was not thorough, so that it can be studied afresh. It has been shown that, as in the case of Wessex long barrows, the mound was sited on a pre-existing mortuary enclosure, and that Greenwell's account of the method of burning the bodies was substantially correct. In these Yorkshire barrows it is clear that when the cremation took place collections of bones representing persons dead for some time as well as fresh bodies were burned.

Little is known in detail of the burning technique which was reported by Colt Hoare in certain Wiltshire long barrows, but it would appear that the mound was thrown up over the pyre after the burning.

Long barrows of various types have a wide distribution in Great Britain. They are normally found on chalk and limestone formations in the southern part of the country well above sea level, though a few examples do occur on gravel at a low level. An example of this, now destroyed, was at Holdenhurst near Bournemouth. Their distribution is also controlled to some extent by the existence of a good water supply, and they often seem to occur in pairs fairly close together. Earthen long barrows are commonest on the chalk lands of Wessex where Wiltshire contains nearly one hundred examples. They also

occur on the Yorkshire Wolds; another important group has been found on the Lincolnshire Wolds and more examples probably await discovery in East Anglia. A few outliers will be found in the Midlands and the Pennines.

The archaeology of long barrows is full of complexity and will not be properly understood until many more have been excavated. But in the last ten years there has been some progress. Before the war the belief was growing that some, at least, reproduced the features of contemporary houses in their excavated plan and so could be regarded as houses of the dead. Recent work on the Fussell's Lodge and Nutbane long barrows in Wessex and at Willerby Wold in East Yorkshire has strengthened this view, which is also supported by the modern interpretation of Pitt-Rivers' excavation of Wor Barrow in Dorset. The most striking advance has been the use of Carbon 14 technique to find the age of charred wood from the timber structures of the Nutbane long barrow. This has given a date of 2,721 B.C. plus or minus 150 years, something very much older than would have been thought possible until recently, but in accord with other Carbon 14 determinations of Neolithic material in various parts of Western Europe and Ireland. It now appears that the construction of long barrows of various types was going on for most of a thousand years.

A variant of the earthen long barrow which seems to be confined at present to Dorset is the so-called 'ridge-barrow' which was found during the excavation of Maiden Castle near Dorchester. A pair of ditches separated by a distance of about 60 feet and 1,790 feet in length was found to stretch across much of the interior of the later Iron Age hill fort. It is possible that the ground between the two ditches had an original elevation of about 5 feet, but the whole had been repeatedly ploughed and would have passed unnoticed but for the finding of the silted ditches. At the extreme east end was a grave containing the completely dismembered body of a young man who had been literally hacked to pieces.

This feature certainly belonged to Neolithic times and overlaid the ditch of a 'causewayed camp' later buried by the hill fort. There is another monument of broadly similar kind on Martin's Down six miles to the west. It is possible that these are a variant form of 'cursus' (see p. 34). As such they are of the same age as long barrows and have a relationship with them which awaits explanation.

Certain features are liable to be mistaken for long barrows:—

(a) Low, flat mounds of earth called 'pillow mounds' occur which seem to be of much later date. One such at Uffington Castle in Berkshire was excavated and found to contain skeletons of Roman date. (See Thurnam, *Crania Britannica*). Others are old artificial rabbit warrens. They can easily be distinguished from long barrow by the absence of a higher and broader end and of flanking ditches, and by their smaller size and usually shorter length. (See 'Wessex from the Air', introduction.)

(b) Sometimes two tumuli (round barrows) are placed close together in contact. They are called 'twin barrows', and there are naturally two summits of about the same elevation. The ditch in these instances is carried round the ends and is shallower than the flanking ditches of long barrows.

(c) A few tumuli are oval or pear-shaped rather than round in plan; not much is known about them, but here again they can be recognised at once from the fact that the ditch is always continued round the ends. Some of these oval tumuli, however, seem to be very short long barrows. A good example proved by excavation is on Thickthorn Down in Dorset.

Long mortuary enclosures

Reference has been made above to the custom of reserving bodies for later burial in long barrows, and to the recognition of the existence of some kind

of mortuary house on their sites. Sites of this kind, but free from long barrows, have now been recognised. Details vary, but they are elongated in plan and are surrounded by a slight ditch with internal bank. This is interrupted by a number of causeways. Wooden, and perhaps turf, structures stood inside these enclosures to house the bodies.

We do not yet know if every long barrow had this preliminary phase on its site, but it is certain that there were long mortuary enclosures which did not become the sites of long barrows. The first examples were recognised by Professor R. J. C. Atkinson at Dorchester and North Stoke in Oxfordshire, both in close relation with other Neolithic features. Another which was first noted from the air has recently been excavated at Normanton Down near Stonehenge. The enlargement of the ditch of the original mortuary enclosure into the ditch of the subsequent long barrow has already been suspected at Wor Barrow in Dorset. At Normanton Down this enlargement seems to have been begun and then abandoned, the explanation of the failure to use the site being possibly the presence of a long barrow less than 100 yards away.

This type of monument, which is probably quite rare, will not be found easily by ground inspection. In plan form it should show up on air-photographs through its ditches, but as these will be slight it should be easily distinguishable from a ploughed-down long barrow. Now that we know of these sites a proper assessment of the long barrow situation will require that as many as possible should be recorded.

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Chambered long and round barrows and cairns

These monuments have a wider distribution than the earthen long barrows and are to be found in most parts of Great Britain. Like the earthen long barrows they were graves for collective burial. An important difference is that they all contain some form of stone-built chamber or vault for the reception of the dead with an entrance and passage giving access from the outside. Thus, while the building of a long barrow and the interment of its dead was a single and final act, and no more bodies could be inserted, the chambered barrows received additions to the burials already in them over a long period. This accessibility has also led to the frequent destruction of their contents by later intruders and treasure hunters.

The distribution and variation in form of these monuments has been much studied, but their relation to the earthen variety is not quite clear, though all the evidence suggests that they belong to the same cultural tradition. There are various well-marked and distinctive groups, but space does not permit a description of all the variations of entrances true and false, forecourts, passages, portholes, different forms of chamber, horn features, revetments, etc. which can be distinguished and used to construct schemes of their relationship to each other. It is rare indeed to find an undisturbed chamber containing the original burials (one was found at Lanhill near Chippenham in 1937); the tale of disturbance is a long one, and investigators are often reduced to examining the crevices and corners of chambers and their trodden floors to find scraps of original material which remain to date the deposit.

Because the main body of most chambered cairns consists of a mound of stones they have been freely robbed for road metalling, wall building, etc. This robbing produces the monuments which have been called 'cromlechs' in Wales and 'dolmens' in Cornwall and elsewhere. These usually consist of one or more large slabs of stone covering a more or less rectangular arrangement of other large stones placed on their ends or edges; the effect is that of a table or of a large box with a lid. These are the exposed chambers of cairns from which all or most of the covering material has been removed. The degree of destruction varies, but the important point for the field worker is to seek for evidence of the former mound. Since these burial chambers normally occupied the eastern end of long cairns a search for the surviving traces of the mound should be made especially to the west, north-west, or south-west of them. It is seldom that no visible trace remains, though excavation may be necessary to clear up the point beyond doubt. A single stone may be the only visible trace of a large chambered cairn today.

In England and Wales the long chambered cairn is almost the rule and the round one a rarity confined to the Irish Sea area. The chambered round barrow of Bryn Celli Ddu in Anglesey may be taken as a good example of the latter class.

In the south large concentrations of chambered long barrows are found in the area from the Mendips to the Cotswolds with outliers in North Wiltshire and along the Berkshire Downs. These have taken advantage of the local deposits of 'sarsen' stone for their chamber construction. There is another outlying group in Kent, also using sarsen. In the far South-west there are chambered barrows in Cornwall, now mere ruins. West of the Severn many examples occur in South Wales, but the rest of Wales has comparatively few. A sparse group lies in the Southern Pennines with the Five Wells barrow at Taddington and the Bride Stones overlooking Congleton as examples.

Some degenerate forms are met with occasionally which are not easy to classify. In Wales there are the long mounds at Carnedd Hengwm near Barmouth. Another example is the curious monument on Great Ayton Moor in North Yorkshire which looks like a ruined hut site with an elongated enclosure, but seems to be the remains of a structure trying to recall the main features of a chambered long barrow in plan if not in elevation. Such sites are difficult to recognise, but are probably more numerous than supposed for this very reason.

The internal and external forms of chambered cairns vary a good deal, and this is especially true in Scotland where some types of them appear to continue in use later than in the South, and where the effects of different kinds of material on their construction and the isolation of the communities which built them give rise to kindred groups with marked local variations.

A major group is found in the South-west extending over much of Argyll, Bute, Arran and the counties of Wigtown, Kirkcudbright, and Dumfries; this is closely related to others in Northern Ireland. It has long narrow chambers with portals built of stone slabs; much earth as well as stone enters into the

composition of the mound, and it can be either long or round in plan. The second great group lies about the Moray Firth in the North-east, some along the coast, and others extending up the river valleys, but always depending on the availability of good soil for settlement. Here they are also both long and round, but the round predominate. There are some eccentric forms grouped together of which the long cairns with horn-like projections at both ends at Yarrows in Caithness may be taken as an example.

Crossing the Pentland Firth into the Orkneys and Shetlands we find some notably complex examples which owe their elaboration to the presence of a fine slabby stone well-adapted for finely-detailed chamber construction and bold corbelling of roofs. The greatest round chambered cairn in Britain, Maeshowe, is in Orkney and possesses the abnormal feature of a 35 feet wide surrounding ditch. This isolated giant clearly owes much to the example of the great chambered round cairns of the Boyne Valley in Ireland. Other peculiar features in Orkney are the 'stalled' cairns in which what is really a long and carefully-constructed cist is divided into as many as ten or more lateral cells contrived by the settling up of opposed pairs of upright slabs projecting from the walls at right angles. There is also the rare two-storied type of chamber represented by Taiversoe Tuack in which two chambers with separate access are superimposed. But the Orkney and Shetland area has been well worked over by the Scottish Commission on Ancient and Historical Monuments and nothing is likely to be added to the list of these monuments except by excavation.

A peculiar local class of chambered cairn is found in the Shetlands which is known as a 'heeled' cairn from the plan form of the constructed stone platform on which it is placed. This has the outline of the heel of a shoe, and the round cairn placed on it contains a cruciform chamber whose entrance is sited at the concave base of the 'heel', thus giving the effect of a forecourt. Another example has recently been found on the mainland in Caithness at Tullochs of Assery.

Finally, in North-east Scotland there is a localised group of cairns which stand inside stone circles and contain passage graves. Associated with these there is also a type of ring-cairn which has similar features of plan. This group has a distribution limited to the valley of the Nairn, the northern end of Loch Ness, the Black Isle, and some alluvial areas in Strathspey, chiefly near Aviemore, which are among the few places capable of profitable ancient settlement in the Central Highlands. This class is known as the 'Clava' cairn from the best known group at Clava on Culloden Moor. They are not isolated monuments, but occur in small close-set groups and cemeteries. A typical example of the passage grave has a more or less circular chamber covered by a cairn which is sustained round the edge by a kerb of heavy slabs leaning inwards. Outside the cairn there is a ring of free-standing upright stones with a diameter of about 100 feet.

The ring-cairns which are associated with the Clava groups have a generally similar plan, but the passage is not present and the central area in the cairn which was occupied by the chamber has now become a circular open space whose edge is retained by large stones. As in the passage grave type large stones also support the outer rim of the cairn and there is a surrounding stone circle. It is uncertain whether these ring-cairns are a degeneration from the chambered type or a separate style in their own right, and in the field it is sometimes uncertain whether a much damaged example has been a passage grave or a ring-cairn. They certainly have the same kind of distribution. Their precise age has not yet been determined but they may be presumed to belong to the Bronze Age. A possible connection with the 'recumbent' stone circle which is another feature of North-east Scotland is mentioned below under stone circles. (See p. 40).

Finally it is perhaps worth noting that chambered cairns in general do not occur singly but in twos and threes so that when one has been located it should be a pointer to others not far away.

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'Causewayed camps'

These are some of the most puzzling sites in British field archaeology. They certainly belong to the earlier part of the Western phase of the Neolithic period in England. They have a fairly limited distribution in the South. This is chiefly confined to the province of Wessex with its most westerly example at Hembury in East Devon, and an eastward extension along the South Downs as far as Eastbourne. At present the Thames valley marks the northern limit of their occurrence with an outlier at Maiden Bower near Dunstable in the Eastern Chilterns. Their focus is the Salisbury Plain area, and the best known example, because it was the first to be thoroughly excavated, is at Windmill Hill a little north-west of Avebury.

They dispute with certain earthen long barrows the claim to be the oldest field monuments in Britain, and as they are between four and five thousand years old and never had any bold elevation to start with, they are much degraded today and not easy to recognise in the field. All but two examples (Abingdon and Staines, both on the banks of the Thames) stand on relatively high ground, but though in several cases (Maiden Castle, Dorset, Hembury, East Devon, and the Trundle, West Sussex) their positions are sufficiently commanding to have been used later for large Iron Age hill forts, they do not take any particular care to seize the best defensive positions, nor were their earthworks of any obvious strength.

Their distinctive feature is that they consist of one, two, or even three more or less concentric banks and ditches which are set at considerable distance from each other, the innermost area often being quite small. While it is probable that their banks were more or less continuous all round the circuit, the ditches associated with these banks consist of a series of elongated oval pits of moderate depth separated from each other by fairly wide causeways. Since little or no evidence of any kind of structure has been found with them their weakness as defensive sites will be obvious. This makes it difficult to

supply them with a satisfactory name, and while it is convenient to call them 'causewayed camps' this is a relic of the time when they were thought to be a feeble Neolithic anticipation of the later hill forts.

There have been various conjectures about their purpose. Owing to the presence of much pottery and animal-bone refuse in their ditches along with an occasional stakehole (usually attributable to a later occupation of the site) the ditches were thought to have been used as the sites of oval huts. A later view, only recently discarded, was that they made up a sort of cattle corral where the local herdsmen came seasonally to sort out and slaughter their cattle before the onset of winter. The presence of a great many butchered bones, predominantly of horned cattle, lent colour to this view, but the distance of many of the sites from any useful water supply remains a difficulty.

It now seems tolerably certain that most, at least, of these sites never contained any form of permanent structure. Where there are more than one circuit of bank and ditch it has been noted that the amount of occupation rubbish is greatest in the ditches of the inner range, and that it diminishes progressively out from the centre.

Further work at Windmill Hill by excavation and by the critical examination of material found there earlier by Mr. Keiller has shown that, while 'Windmill Hill' pottery predominates, most other forms of Neolithic pottery are represented, and that there is a remarkable assemblage of various forms of stone as axes, grain rubbers, pounders, pot-backing material, etc. which derives from many sources, far and near. Another point is that the animal bones found in the ditches, which are certainly the remains of feasts in most cases, have been carefully buried and have not been pulled about by the numerous dogs and predators which must have haunted the site.

All this has led to the suggestion that these 'camps' were places of periodical assembly for social and, possibly, for ritual purposes, and that they may have been fair grounds or trucional areas to which folk came from long distances. Where there are multiple 'defences' this may be the result of the expansion of the Neolithic community over a long period leading to necessary extensions of the defined area, and it is certain that the period in which they were places of resort must be measured by centuries and possibly by most of a thousand years. It seems that their features, such as they were, had already been much degraded by use before they were finally abandoned, and this, added to the long period which has elapsed since, adequately accounts for their vestigial character today where they were not obliterated by later Iron Age constructions. Finally, the suggestion has been put forward that, as they antedate the earliest known 'henge' monuments, the simple ring-work form of the earliest of these sites may have been influenced by the form of the 'causewayed camp'.

* Thirteen have been recognised so far and, partly owing to their great age, and partly owing to their being covered by later works, few are very obvious on the ground. The example on Whitesheet Hill on the western edge of Salisbury Plain is particularly instructive because the complete circuit of the work with its characteristic causeways is clear on the ground and a Bronze Age barrow has been planted on it in a way which emphasises the greater age of the earthwork. Here there is also an Iron Age hill-fort close by which has not followed the example of Maiden Castle, Hambury, and the Trundle by choosing precisely the same site. In the case of the two Thames-side examples both were invisible on the ground and were only found by gravel-digging and air-photography.

The finding of new ones will therefore be difficult and the best hope lies in air-photography. It can no longer be said that they will be confined to higher ground for at both Abingdon and Staines they are practically at river level. Their present known distribution, which must be incomplete, suggests

that they belong to Southern and Western England. Obviously the finding of Neolithic potsherds of any kind accompanied by animal bones may be an important clue, the more so since there is such a shortage of known Neolithic dwelling places of any kind, but only excavation will give firm proof.

See:

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R. E. M. WHEELER: *Maiden Castle, Dorset*. Report No. 12 of the Research Committee of the Society of Antiquaries, 18-23, 81-88.

Ordnance Survey map of Neolithic Wessex, 1932. (Out of print). This does not show the complete distribution.

The 'cursus'

This is a type of monument which has long been known in the south of England since Stukeley first recognised and named the example on the north side of Stonehenge in the early 18th century. What he saw then was a pair of moderate-sized banks with external ditches and some 150 feet apart running more or less parallel east and west for a distance of just under two miles, the east end of the figure thus formed being closed by a long barrow. He suggested that it might have been the scene of games connected with the rites at Stonehenge and called it a 'cursus' (Latin for a racecourse). He may or may not have been right in this guess, but the name has become attached to the type. The other example early recognised was the Dorset cursus which runs for six miles across Cranborne Chase, and also has a relationship with more than one long barrow, not only at its west end, but also at several points in its course.

Since the last war air-photography has given us a number of other examples in various parts of England and Wales. They vary in length up to the six mile limit of the Dorset cursus, but are usually much shorter; their average width is from 200 to 400 feet. In general they occur in areas of presumed sanctity where henge monuments (q.v.) are also found, though it seems that they are definitely older than these, a fact which was shown by the excavation at the Thornborough henge monument in the Vale of York where the ditch of a cursus was found to have silted up naturally before the henge was built. With the exception of the two southern examples mentioned above all known examples have been obliterated as surface features and only show up from the air as crop marks. Although they cover a lot of ground their earthworks are slight and easily ploughed out.

A wide cut in the ground like a gravel-pit may show the external ditches of a cursus in section, but unless it is possible to observe the persistence of these over some distance as the pit is increased in size they can easily be mistaken for pits or ditches of no particular age. Something very like a cursus has been revealed by progressive coast erosion near Clacton in Essex, and it may have belonged to the old land surface which has been largely removed by the sea since Bronze Age times.

The banks of some cursuses are parallel and straight, while others are less regular, and experience suggests that it will be exceptional for them still to be plainly visible on the ground. They are certainly Neolithic in date, and their connection with long barrows in the south, at least, is clear. They are generally older than the henges and their very characteristic form suggests that Stukeley was broadly right in his interpretation of their purpose, though perhaps they

were for processions rather than racing. Where a cursus has been found it may be regarded as a hint to look out for a henge monument also. This has not been infallible in producing new henges, but the same areas seem to have attracted both.

See:

J. F. S. STONE: The Stonehenge 'cursus' and its affinities, *A. J.*, civ, 1948, 7-19.

R. J. C. ATKINSON: The Dorset Cursus, *Ant.*, xxix, 1956, 4-9.

F. de M. VATCHER: The Thornborough Cursus, *Y.A.J.*, xl, 1960, 169-182.

'Henge' monuments

There are certain sites in Britain, of which Stonehenge, Avebury, and Stenness are the best known, which have attracted attention for centuries past as wonders because of their grandeur and enigmatic character. Speculation about their age and purpose has given rise to a considerable literature mainly associated with Stonehenge, and the common factor in it is the belief that these sites were ancient temples.

But although Stonehenge is unique in a number of respects it has long been recognised that there are other sites of similar age and purpose in widely-scattered parts of the country. Nothing very practical was done about them, however, until Arbor Low was excavated in 1902 and some work was also carried out at Stonehenge itself in 1920. A firmer foundation of fact was thus laid, but the critical event in the modern study of 'hengés' was the discovery from the air of the site known as 'Woodhenge', two miles east-north-east of Stonehenge, in which wooden uprights took the place of standing stones and may be interpreted as supports for a roof. The air-photographic technique opened up new prospects, and the discovery of another wooden monument at Arminghall outside Norwich soon after led to a rapid intensification of research. Some sixty henge monuments have now been recognised in Britain, and the full tale is not yet made up. Much work has also been done at Stonehenge and other sites up and down the country which has given us a clearer idea of the character and affinities of these monuments.

The term 'henge monument' requires a word of explanation. It is not a very satisfactory description of these sites since, on strict etymological grounds, it should only be applied to sites which contain a 'hanging' element like the lintel stones of Stonehenge. It is fairly certain that at one time this feature was not confined to Stonehenge, though apparently very limited among stone monuments. The wooden circles may have had lintels, but there is no certainty on this point. Thus we follow the name given by our Anglo-Saxon ancestors to the most striking of these monuments and disregard the fact that the 'hanging' feature may have been very rare, if not unique.

Henge monuments vary greatly in size. They are all more or less circular in plan and their diameters vary between the extremes of 1,600 and 30 feet. Their range in time seem to lie between 2,500 and 1,500 B.C. They are found in England, Scotland, and Wales, and, less certainly, in Ireland. Often the burial places of the dead (barrows) group about them in a way which confirms the idea that they were focal points in religious belief and practice, and the earliest form of henge monument, best exemplified by the first phase at Stonehenge, has itself a quasi-funerary character as it contains numerous cremations in the so-called 'Aubrey' holes. Stonehenge is itself surrounded by the greatest assemblage of barrows in Britain. Aside from certain possibly analogous sites in Ireland the henge monument does not at present appear to have any obvious counterpart outside Britain.

Classification of henge monuments

Modern work on the classification of henge monuments stems from Professor Grahame Clark's article on the Arminghall timber circle and its affinities,

published in 1936, but since then the leader in this branch of study has been Professor R. J. C. Atkinson who came into it through his work on the group of henge monuments at Dorchester in Oxfordshire, followed by his intensive study of Stonehenge. Thanks are due to him for much help with this section.

The common feature shared by all henge monuments is a surrounding earthwork, usually more or less circular, which has a ditch *inside* it. The position of the ditch is not invariable, nor is there always only one ditch, but this feature serves to distinguish most henge monuments at once from the defensive works for which they might easily be mistaken. The earthwork may have either a single entrance or two opposite ones.

Settings of stones, wooden posts, pits, and burials can also be found inside them. The great example of a stone setting is at Stonehenge where the horse-shoe arrangements of trilithons surrounded by the circle of uprights carrying lintels is world famous, but this in fact belongs to a later phase of the monument which began its life in simpler form. Few henges have any stones standing in association with them today though there are recumbent ones as at Arbor Low, and it is a question whether these have been deliberately cast down. The feature of wooden uprights has been examined thoroughly by excavation at Woodhenge and Arminghall, but no other certain examples are known in a henge.

The Classification now proposed is as follows: —

- i Monuments with a single entrance.
- ii Monuments with two opposed entrances.
- iii A sub-group of ii in which the surrounding bank has a ditch both inside and out.

Note: Monuments which consist of free-standing stones or wooden posts without a surrounding bank (The Sanctuary, Overton Hill, Wilts.; the Roll-right Stones, Oxfordshire; Long Meg and her Daughters, Cumberland), of stone circles in continuous unbroken earthworks (Litton Cheney, Dorset), or continuous unbroken earth circles without central features (Priddy Circles, Mendip) are not included in the henge category.

Class I

The best known examples are Stonehenge (first phase), Arminghall, Mayburgh, and Maumbury Rings, but there are more than twenty altogether. Some are quite small like the five excavated by Atkinson at Dorchester, Oxfordshire, and will often only be recognised on air-photographs. Scotland has examples like Balfarg near Markinch in Fife and Overhowden near Oxtoun in Berwick. Here the diameters are 180 feet and 400 feet respectively.

In the north of the country in Easter Ross a group of small examples has been recognised by Dr. Woodham at Conon Bridge, Contin, Culbokie, and Muir of Ord. The small version of the Class I type can easily be mistaken for a large barrow circle and this should be remembered when air cover is being examined. In the field suspected examples will normally require excavation for their status to be made certain.

Monuments in Class I tend to approach a true circle in plan but, aside from Woodhenge and Arminghall, they do not so far appear to contain any internal features except rings of pits containing cremation burials (the 'Aubrey Holes' at Stonehenge). Thus they could be communal cemeteries, but this does not mean that the prime reason for them was sepulchral any more than a church has this sole purpose because it is surrounded by burials today. Class I monuments are normally sited on low ground and many of the sites seem to have been chosen because they are near streams. Their cultural affinities are all Neolithic, but in this as well as in siting Gorsey Bigbury on Mendip is

exceptional. It is placed on a high plateau and large quantities of Beaker pottery (Early Bronze Age) have been found in its ditch which shows that this ware was in use there when the site was comparatively new.

Class II

Although this class contains the smallest henge (Fargo Plantation near Stonehenge, diameter 30 feet) three of its examples, Durrington Walls, Avebury, and Knowlton are the largest henges known. Eight of the class either contain, or are known to have contained, stone circles, some of them of impressive size. At Avebury it has been shown that the original height from the bottom of the internal ditch to the top of the surrounding outer bank was no less than 55 feet.

This type of monument spreads up the whole of Britain from the Channel to the Orkneys in a fairly narrow belt which does not extend far east and west in contrast to Class I which is found in both east and west. The greatest example in Scotland is at Stenness in Orkney. An exceptional case is Cainpapple near Torphichen where an example of the Class II form of no great size (145 feet by 125 feet), which is clearly of Beaker date, succeeds a strange arrangement of stone setting and late Neolithic cremation cemetery which has no exact known parallel but which may be regarded as having at least some of the features of a Class I monument. It then goes on to have a long life as the site of a burial cairn whose use covers most of the Bronze Age and ends with the addition of several graves which may belong to the Iron Age. This site has had the advantage of being thoroughly and expertly excavated. It was obviously regarded as a sacred place for at least two thousand years. Its character as a henge came out because the traces of the Class II phase could be plainly seen in the field even though the later cairn which had been placed in the site tended to distract attention from this.

There are other small examples of Class II in the Border country as at Broadlee by Middlebie in Dumfriesshire (180 feet in diameter) and at Coup-land in Northumberland.

Culturally Class II is virtually free from Neolithic influences and people using Beaker pottery seem to have been responsible for them all.

Class IIa

This variant of Class II is confined to five sites close together in the Vale of York and one at Dorchester, Oxfordshire (the Big Rings). As mentioned above, they are similar to Class II except that there is an external as well as an internal ditch. This outer ditch is visible on air-photographs and has been proved by excavation.

The Yorkshire sites are the three circles at Thornborough and three others near Hutton Moor and Cana, all on low ground north-east and east of Ripon. All six are of about the same dimensions with an overall diameter of some 550 feet. There are no stone settings or any indications of post-holes. The Dorchester example is a little smaller and almost completely destroyed by cultivation (all the Dorchester sites have now been obliterated by gravel digging). Nothing is known of their cultural affinities except what can be inferred from their analogies with Class II, but the excavation of the Dorchester site has now definitely placed it in Class II.

Survivals

There are signs that the henge monument continued to have influence well into the Middle Bronze Age, and even later, in connection with burials. The best examples of this are the familiar arrangement of great stones at Stonehenge and the Bleasdale burial circle in Lancashire with its remarkable timber features.

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Class II

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Class IIa

DORCHESTER 'BIG RINGS'

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THORNBOROUGH MOOR AND HUTTON MOOR

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- F. de M. VATCHER: Y.A.J., xl, 1960, 169-182.

Scotland

- STUART PIGGOTT: The excavations at Cainpapple Hill, West Lothian. P.S.A.S., lxxxii, 1947-48, 68-123.

Site of uncertain character

MARDEN

- SIR RICHARD COLT HOARE: Ancient Wilts., ii, 1819, 4 (plan).

- Also the three Ordnance Survey period maps in the 'Long barrow and mortuary enclosure' bibliography on p. 29. These only show sites known before 1940.

Stone circles

Recent research has sought to establish a clear distinction between stone circles which stand free and those which are surrounded by earthwork and so to be regarded as features of henge monuments. This broad classification will be accepted here. The henge circles will be dealt with first before passing on to consider the free-standing circles.

Stone circles in henge monuments

Most of the famous circles fall into this class. No attempt can be made to give a detailed account of them here, but the subject may be pursued with the aid of the bibliography. In most cases little or nothing survives of this feature of the henge monument, if it ever existed at all, but at Stonehenge, Avebury, Arbor Low, and Stenness in Orkney the circles are important.

The case of Stonehenge is very remarkable, involving a quasi-architectural treatment of the site and the importation of stones from a distance, some of them from as far away as Pembrokeshire. The stone features are secondary to an already existing henge monument whose chief surviving element is the surrounding earthwork, and they appear to belong to the Middle Bronze Age. Except for the evidence provided by the 'blue stones' at Stonehenge, which appear to have stood elsewhere in an arrangement of uprights and lintels before their re-erection at Stonehenge, there is no indication of the use of this device elsewhere, though it is always possible that the wooden circles may have had lintels.

There is much that is instructive for field workers in the late Mr. Alexander Keiller's work on the stones of Avebury. For centuries the local villagers were engaged in breaking up the stones which had been set up inside the great earthen circle and also outside in the form of an avenue stretching as far as the Sanctuary on Overton Hill to the south-east. Their object was usually to get building stone, but they also wished to clear plough-land of obstacles. This was often done by digging a large hole in the solid underlying chalk by the side of the stone, and then toppling it in and burying it. Realising this, Mr. Keiller carried out a systematic examination of the line of the avenue and of the site of the circle of stones which had stood right round the monument on the inner side of the ditch. Many buried stones were found and, as the original sockets in which they had stood were clearly detectable close by, it was possible to re-erect them. The result has been an impressive reconstruction of a lot of the features of the monument with the original material standing in its old positions.

The only other complete stone circle in a henge monument is at Arbor Low in Derbyshire. Here the stones are all recumbent round the inner side of the ditch, and they obstruct the two entrances on the inner side. Excavations carried out here in 1901 failed to prove the existence of any artificial sockets in which they may have once stood, though a much more thorough investigation would be necessary to place this point beyond doubt. It is possible that the circle was not an original feature of the monument, but was added later like the stone settings at Stonehenge.

Other stone circles

These are numerous in most of the areas of Britain where stone is available and may be placed in three classes:—

CLASS I. Great free-standing circles like Callanish and Stanton Drew.

CLASS II. Those whose diameter averages 50 feet or more. Long Meg and her Daughters in Cumberland, the Nine Maidens and the Hurlers in Cornwall, and the Rollright Stones in Oxfordshire are typical examples.

CLASS III. Those whose average diameter is much less than that of Class II, but whose stones are very large. There are several of this type in the Scottish

Border country and in Northumberland. Duddo Four Stones is a good example with a diameter of 28 feet. They differ from cairn circles (see below p. 41) in the size of the stones which often attain a height of 6 feet and more, and in the absence of any remains of a cairn. Whether the absence of a cairn, however, was an original feature of the monument cannot now be determined.

Stone circles are a common feature of Scottish field archaeology. They range from a major monument like Callanish down to the small circles which surround burial cists, and their common feature is that they all seem to belong to the Bronze Age. The small type surrounding a cist is found in most parts of the country which favoured ancient settlement and good examples occur in the Isle of Arran (Mauchrie Moor), in the Crinan area of Argyre, and on the shores of the Dornoch Firth. Reference has already been made above to those which surround chambered cairns of the Clava type.

There is an eccentric type found in North-east Scotland in the counties of Moray, Banff, Aberdeen, and Kincardine which seems to be related to the Clava type in its degeneration. This is the 'Recumbent' stone circle which has more than seventy examples in this area. It gets its name from its most distinctive features, a massive block of stone lying flat with two tall stone uprights set close to each end. These three stones are the major feature in an irregular circle of stone uprights which decrease in height the further they are away from the flankers of the recumbent stone, which may themselves be as much as 10 feet in height. The average diameter of this circle is about 70 feet but may exceed 100 feet. It is fairly closely set round what appears to be the remains of a low cairn with a central hollow about 10 feet in diameter in its middle. Both the outer edge of the cairn and that of the central hollow are defined by slabs set on edge and upright; sometimes the central area shows signs of paving.

These sites are usually in bad condition, but the great size of the recumbent stone and its flankers tends to keep them in position and will identify this type of circle. Burials have been found in the central area and excavation has shown that at least some, like Old Keig, belong to the end of the Bronze Age of Scotland which brings them well into the first millennium B.C. They seem to be the last trace of the megalithic tradition in Scotland.

Very few stone circles are now complete. Most of them have been destroyed, often quite recently, for building materials. Sometimes the original uprights have fallen or have been broken up so that only their stumps remain. Sometimes they have been pulled bodily from their holes which were not always very adequate for their purpose, and many have owed their stability to the skilful disposition of packing stones. In spite of this it is sometimes possible to recognise the traces of the holes in which stones have stood, and these should be noted.

The purpose of stone circles

Little work has been done on free-standing stone circles outside Scotland. It seems beyond doubt that their purpose was basically religious and grounded on their use as places of burial. They originate in the Early Bronze Age and have been objects of regard for a long time since. Burials occur within them, sometimes in centrally-placed graves and sometimes under small groups of burial cairns, but the practice varies and nothing is known about the content of many. Both at Stanton Drew and at Avebury there is a curious arrangement of stones known as a 'cove' which recalls, though on a larger scale, the burial place in a chambered barrow. A good case of continuity in the use of a stone circle as a burial place is at Loanhead of Daviot in Aberdeenshire. This appears to have begun with a burial of Beaker (Early Bronze Age) date; later a Late Bronze Age cemetery was attached to the site and in the Iron Age further burials were made in the middle, more than a thousand years after the first use of the site.

Certain other features have been mistaken for stone circles. They are:—

HUT CIRCLES. The foundations of primitive stone huts are circular in plan. While they are usually built of smaller stones they can sometimes contain large blocks, recumbent or set upright, especially on either side of the entrance and sometimes to provide inner and outer facings to the wall. The huts usually have smaller diameters than stone circles of Class II.

CAIRN CIRCLES. Certain burial cairns have a ring of stones round their outer edge to keep loose stones from rolling away. The cairn has sometimes been removed leaving only the ring of uprights. The diameter is much less than that of stone circles of Class II. The uprights are set close together and in contact. They can also have an outward lean, due probably to the former pressure of the cairn they retained.

The following books and articles may be consulted:—

England

- G. F. TREGELLES: *Stone circles in Cornwall*. Victoria County History, Cornwall, i, 1906, 379-406.
- A. L. LEWIS: Articles on stone circles and other megaliths published in the *Journal of the Royal Anthropological Institute*, vols. i, vii, xi, xiv, xvii, xx, xxv, xxxv, xxxix, new series viii; also in the *Journal of the Royal Institution of Cornwall*, xiii and xiv, and in the *Archaeological Journal*, xlv.
- O. G. S. CRAWFORD: *Long barrows and stone circles of the Cotswolds and Welsh Marches*, Bellows, Gloucester, 1925.
- S. and C. M. PIGGOTT: *Stone and earth circles in Dorset*. *Ant.*, xii, 1939, 138-158.
- For Stonehenge, Avebury, and Arbor Low see bibliography on p.
- LONG MEG AND HER DAUGHTERS
- C. W. DYMOND: *T.C.W.A.S.*, v, old series, 39; xi, 1911, new series, 361-2; xiii, new series, 1913, 406; xxii, new series, 477.
- STANTON DREW
- C. W. DYMOND: *J.B.A.A.*, xxxiii, 297-307.
- L. V. GRINSELL: *Ministry of Works Guide*, H.M.S.O., 1956.
- THE SANCTUARY, OVERTON HILL
- M. E. CUNNINGTON: *W.A.M.*, xlv, 1931, 300-335.
- DUDDO FOUR STONES
- Trans. Berwickshire Field Club*, x, 542-4; xxviii, 184.

Scotland

- V. GORDON CHILDE: *The Prehistory of Scotland*, Kegan Paul, 1935, 111-113.
- JOSEPH ANDERSON: *Scotland in Pagan Times*, Edinburgh, 1886, chapter 2.
- F. R. COLES: Articles on stone circles in Perthshire, Aberdeenshire, and the North-east of Scotland, published in *P.S.A.S.* in vols. xxxiv to xlv (1900 to 1911).
- JAMES RITCHIE: Articles on stone circles in Aberdeenshire and Kincardineshire in *P.S.A.S.*, li (1917), liii (1919), liv (1920) and lvii (1923).
- CALLANISH
- Inventory of the Outer Hebrides*, Royal Commission on Ancient and Historical Monuments (Scotland), H.M.S.O., 1928, 24-27, plan and illustrations.
- LOANHEAD OF DAVIOT
- H. E. KILBRIDE JONES: *P.S.A.S.*, lxix, 168-222; lxx, 278-314.

Wales

- R. E. M. WHEELER: *Prehistoric and Roman Wales*, Oxford, 1925, 104-109.
- W. E. GRIFFITHS: The excavation of stone circles near Penmaenmawr, North Wales. *P.P.S.*, xxvi, 1960, 303-339.
- THE FOUR STONES, WALTON AND WOMASTON, RADNORSHIRE
- Arch. Camb.*, xi, 6th series, 1911, 105.
- Also Ordnance Survey map of Neolithic Wessex, 1932. (Out of print).
- Ordnance Survey map of South Wales showing the distribution of long barrows, megaliths, etc., 1936. (Out of print).

Standing stones

Under this term are included objects formerly described by the names 'menhir' and 'monolith'.

Standing stones need no definition. The term does not, of course, include any natural erratic boulders, being confined to stones which have been set up by the hand of man. Standing stones are often simply the last surviving vestiges

of the burial chamber of a long barrow or cairn; such, for example, is the Long Stone at Mottistone in the Isle of Wight, and doubtless also many of the 'hoar stones' in Gloucestershire and Oxfordshire. Whenever a single upright stone is being inspected careful search should be made for any other large stones close by, and for any traces of the mound of a long barrow, or, in stony country, for signs of loose stones which have been, or still are, piled up to form a cairn.

Standing stones may occur singly or in groups, generally set up in line like the Devil's Arrows at Boroughbridge in the Vale of York. With the exception noted above it is not possible to assign standing stones to any single period. In some cases Bronze Age cremations in urns have been found in the ground close to the base of a standing stone, and as this is hardly likely to be mere coincidence the existence of the stone in its present position at the time of burial is probable. There is a numerous class found chiefly in the Highland zone of Britain which consists of memorial pillars of different sizes bearing inscriptions in late Latin or Ogam characters. Reference will be made to these later in the post-Roman period. In the Highlands of Scotland there was a custom of erecting a stone to mark a notable occurrence on the spot such as the death of a man famous in his time, but in the absence of a tradition of its cause only the fact of the stone remains.

The antiquity of a standing stone can sometimes be deduced from the way it has weathered. Not all kinds of stone will be helpful in this sense, but the principle is well illustrated by the Devil's Arrows. These are great shafts of millstone grit which have certainly been standing in their present place since prehistoric times. They carry deep vertical fluting which has been caused by weather action during the long period in which they have been standing upright, and it is worth considering how far this observation can be extended to prove protracted vertical immobility in other humanly-erected stones of this kind. A case in point is another example of moderate size called Wade's Stone on the moors north-east of Whitby. This also is millstone grit, and it carries similar vertical fluting which seems to put its antiquity in its present position beyond doubt.

Many standing stones are no longer on the original site where they were first erected. When this is known the fact should be recorded.

It should also be remembered that in many parts of the country where suitable stones are available they are set up by farmers to act as rubbing posts for cattle. These are seldom likely to deceive anyone, but it is well to know of this practice. The stones in question are often obviously placed in the middle of modern fields and bear plenty of signs of use.

See:

O. G. S. CRAWFORD: *Long Barrows and Stone Circles of the Cotswolds*, Bellows, 1925, 185-219.

R. E. M. WHEELER: *Prehistoric and Roman Wales*, Oxford, 1925, 103-4.

J. H. HUTTON: *Assam Megaliths*, *Ant.*, iii, 1929, 324-338. (A description of modern megaliths in India, suggesting purposes for which the prehistoric European ones may have been set up).

THE DEVILS ARROWS

A. L. LEWIS: *J.R.A.L.*, Nov., 1871, 180-183.

W. C. LUKIS: *P.S.A.*, 2nd series, vii, 134-138.

THE FIVE KINOS

D. D. DIXON: *Upper Coquetdale*, Newcastle, 1903, 122-123.

—: *Archæologia Aeliana*, new series, iv, 135.

HAROLD'S STONES, TRELLECK

O. G. S. CRAWFORD: *As above*, 209-210, plan.

Stone rows and stone avenues

Stone rows occur in several parts of Great Britain where stone is readily available, and the principal groups are on Dartmoor and in the extreme North-east of Scotland. The stones of which they are composed are usually quite

small, seldom exceeding a height of three feet above the ground, and they nearly always seem to be associated with burial cairns of the Bronze Age. They can be seen at Merrivale, Black Tor, Ringmoor Down, Trowlesworthy Warren and many other places on Dartmoor. At Garrywhin near Wick in Caithness and at Allt Breac in Sutherland rows of short stones have been arranged to point to cairns, one of which has been shown to contain an Early Bronze Age burial. There is also a large range of them on the Hill of Mid Clyth in Caithness which, on a small scale, recalls the famous alignments of great stones at Carnac in Brittany. Since the stones in our rows are usually quite small they can easily be removed, and they can also be obscured by heather and other moorland vegetation. It is also conceivable that others may have been completely buried by the growth of peat, and as a moor fire can clear both these kinds of cover new examples may still await discovery. As a warning it is worth noting that ancient fields sometimes have their boundaries defined by large stones as in the case of the sarsens which have been used for this purpose in Wiltshire.

Stone avenues are more considerable things made of much larger stones and extending for greater distances. The principal examples are at Avebury and Callanish, and reference has already been made to the partial reconstruction of the Avebury avenue by Mr. Keiller. It is plain that avenues of this kind are accessory to these great religious monuments and must share their character. It is improbable that any evidence for features of this kind remains above ground.

The following books and articles may be consulted:—

R. N. WORTH: The Stone Rows of Dartmoor, Transactions of the Devon Association, xxiv, 387-417.

R. BURNARD: Victoria County History of Devon, 1900, Vol. i, 357-360.

V. G. CHILDE: The Prehistory of Scotland, 1935, 114-115. For Avebury and Callanish see the bibliography of henge monuments and stone circles.

Ordnance Survey map of South Wales showing the distribution of long barrows, megaliths, etc., 1936. (Out of print).

Incised and pecked decoration

In concluding this section some attention must be drawn to this method of making various designs on stones in antiquity. The earth-fast boulder decorated with pecked marks and designs of uncertain age and significance is a common feature in many parts of Britain north of the Trent, and particularly in Scotland. The design is seldom anything more complicated than a series of round depressions ('cup marks') sometimes surrounded by rings produced by pecking the surface of the stone, and no one knows whether these are merely a kind of ancient doodle or whether they have some deeper meaning.

This brings us to the question of designs on the stone monuments of the Neolithic and Bronze Ages generally. These are quite frequent in the nearer parts of Western Europe and in Brittany in particular. It is now known that Stonehenge carries, besides many modern inscriptions, the pecked outlines of flat axes and also of a weapon which may be a Mycenaean-type rapier. There are also other less obvious designs, and there can be little doubt that they all belong to the Bronze Age. Other pecked figures of axes are known elsewhere, and the outlines of human feet produced by the same method have recently been recognised on a stone slab taken from a Mendip barrow.

Chevron and other designs have now been found on stones from various burial chambers, notably at Barclodiad yr Gawres in Anglesey, and undoubtedly more remain to be found. The conditions which prevail in burial chambers are difficult for this kind of observation, but the judicious use of lighting can often bring out details quite invisible to direct vision. The same applies to stones in the full light of day where experiments with oblique lighting at night may bring out incised features.

The following may be consulted: —

- T. G. E. POWELL and G. E. DANIEL: *Barclodiad y Gawres*, Liverpool, 1956
P. J. HARTNETT: *Excavations at Four Knocks, Co. Meath*, P.R.I.A., 1956-57, lviii, 197-277.
S. PIGGOTT: *Neo. Cultures of the British Isles*, 219-220.
J. RITCHIE: *Cup marks on the Stone Circles and Standing Stones of Aberdeenshire and part of Banffshire*, P.S.A.S. lii, 1917-18, 86-121.

TUMULI

(ROUND BARROWS AND CAIRNS)

General

Round burial mounds, whether made of earth or piles of stones, are the commonest objects of antiquity met with in the field. They are called by different names in different parts of the country . . . barrow, low, howe, cairn, carn, carnedd, tump, toot, barp, etc. The great majority of them belongs to the Bronze Age (2,000 to 500 B.C. approx.), but mound burial continued to be practised in Southern Britain in Iron Age, Roman, and Anglo-Saxon times. It only ceased with the coming of Christianity.

The former practice of the Ordnance Survey, still visible on some of the unrevised maps, was to describe all round mounds of earth or cairns of stone as tumuli, whether they were known, or only presumed, to be covering a grave. Today the term tumulus is reserved for those *earthen* mounds either known or presumed to be covering burials. Formerly a class of larger mounds, now known to belong to early medieval castles also received this name in error (see Castle Mounds, p. 121), but now they are either given their correct technical description or are described as 'Mound' in the appropriate type. All piles of stones are called cairns whether their funerary character is known or not, but the use of an 'antiquity' type will mean that the Survey believes it to be sepulchral. In some very lofty situations it will be obvious that they are not graves. Where a mound has a local name which clearly indicates the belief that it is a burial place the descriptive name tumulus is not added.

Burials in round barrows and cairns may be by inhumation or cremation, but this is a matter which can only be decided by excavation.

Experience alone permits the recognition of barrows at sight under different conditions of soil and cultivation. There are, however, a great number which are visible on the ground which are not yet recorded on Ordnance Survey maps. Their frequent occurrence and relatively small size have exposed barrows to much destruction for centuries past. There is evidence that chambered barrows were broken into in Roman and Viking times, and in the Middle Ages the belief, not always unfounded, that they might contain treasure, led to the right to rifle them being granted by the Crown. A religious motive led the monks of St. Albans to open the now vanished Hills of the Banners at Redbourne in Hertfordshire in a search for relics of St. Amphibalus, the companion martyr of St. Alban. They considered that they were successful, but they probably only disturbed some Anglo-Saxon graves. Unabashed treasure hunting continued in the 16th and 17th centuries when one of the active practitioners was the alchemist, Dr. John Dee, and this sordid motive was gradually replaced by genuine antiquarian curiosity which was hardly less disastrous in its effects. It is impossible to say how many barrows had been dug by 1800 in the country at large, but few Anglo-Saxon barrows in Kent seem to have escaped the attentions of Douglas and Fawcett by that time. A veritable barrow-digging craze set in during the early 19th century, and it only began to gain scientific respectability with the work of Cunnington and Colt Hoare in Wiltshire, Warne in Dorset, the Batemans in Derbyshire and Staffordshire, Greenwell all over the country, and Mortimer in East Yorkshire.

John Thurnam was the first to put the study of barrows on a sound basis by his monograph published in Vol. 43 of *Archæologia* in 1871. This was followed in 1877 by the publication of Canon Greenwell's 'British Barrows' which is the record of very extensive digging in many parts of the country, but exasperating in its failure to give accurate locations of many of the barrows dug, or to supply any plans or sections of the work done. J. R. Mortimer's work in East Yorkshire, published later in 1905, provides us with a much better documentation of work in an important area.

The standard of care in excavation, observation, and publication steadily rose, but much of this work leaves us asking questions which can no longer be answered. Today the technique of barrow digging is highly refined, and as a result many internal and external details of construction have come to light which bear on the rituals practised at the time of burial and on the beliefs of the time.

The subject of round barrows is so large that it must be treated summarily, and this can be done with the greater safety because of the recent publication of P. Ashbee's 'The Bronze Age Round Barrow in Britain' which deals comprehensively with the subject. The observation and interpretation of the structure and contents of round barrows is the province of the excavator, and the field worker is only concerned with their outward appearance and the means of recognising them. They are often in very reduced circumstances. In chalk and stone countries where barrows have escaped the attentions of casual diggers and the plough the original form may be largely preserved, but on clay and sandy soils the ordinary processes of time and erosion have often combined to change them very much. The building of large numbers of stone walls in Derbyshire and elsewhere in connection with land enclosure has destroyed many which were pulled to pieces as handy sources of material, and variants of this tale of destruction could be multiplied.

The total number of round barrows which has existed in Britain is difficult to determine, but it must have been in excess of 20,000. Field workers will always be concerned with the external forms of barrows and cairns. Only excavation can give certain knowledge of the phase of the Bronze Age to which most of them belong. The great round barrow known as Duggleby Howe in East Yorkshire is an example which is definitely known to belong to the Secondary Neolithic culture and so may hark back into the 3rd millennium B.C. There are others which belong to this phase, but considered on form alone there are three classes into which round barrows fall.

1. bowl barrows
2. bermed barrows
3. pond and saucer barrows.

These will be dealt with in turn.

Types of round barrows

1. **BOWL BARROWS.** This class is widespread all over the country. As its name suggests, it has the form of an inverted bowl, and it can be found with or without a ditch and, less commonly, with a slight bank round the outer edge of the ditch. It is important to note that there is no space between the edge of the barrow and the ditch, the curve of its profile sweeping down without interruption from the top of the barrow to the bottom of the ditch. It is not difficult for the ditch of a bowl barrow to be completely filled up when the barrow is in bad condition, riddled with rabbits, or otherwise degraded, and sometimes nothing but excavation will settle the point whether a ditch is really present.

2. **BERMED BARROWS.** Here there are three distinct forms, bell barrows, disc barrows, and an intermediate form known as a bell-disc barrow.

The essential point with these three types of barrow is that, while the mound can vary a good deal in size and is not obviously different from that of bowl barrows, there is a considerable belt of land left between the skirt of the mound and the inner edge of the ditch which invariably surrounds it. This is known as a berm. In the case of the bell barrow the ditch has no outer bank, but in the other two types an outer bank to the ditch is a marked feature.

Disc barrows are very distinctive objects. The central mound or mounds (for there can be more than one) are quite slight, and might almost escape attention were it not for the wide surrounding berm and the ditch with its external bank. They form striking objects on air-photographs.

Bell-disc barrows are a type which lies half way between the bell and the disc barrow in that the central mound is only of moderate size; not the mere heap of the disc barrow, but also far less than the large mound of the bell barrow. It also has a wide berm with surrounding bank and ditch.

3. POND AND SAUCER BARROWS. These are relatively uncommon and confined to the chalk areas of the south. The pond barrow appears as a regular circular shallow depression, anything from 30 to 120 feet in diameter, surrounded by a small bank. Saucer barrows are very flat mounds between 60 and 90 feet in diameter with no berm and surrounded by a ditch with an external bank.

It would be possible to say a great deal about the cultural affinities of these different types of Bronze Age barrow, but for this the reader must be referred to the Ashbee book. In any case there are a great many slight variations in their form, some deliberate. Available materials exert some degree of control here, and far more aberrant forms will be found in the Highland zone for this reason. There can also be much variation in size. Round barrows still standing 20 feet high occur, with proportionate diameters, but the normal original height was more often 8 to 10 feet.

While on the subject of size it is necessary to mention a celebrated mound, Silbury Hill, which stands by the side of the Bath road to the south of Avebury in Wiltshire. This is a gigantic mound, largely artificial, though it owes something of its height to scarping, and no satisfactory solution of its age or purpose has ever been found, but it is almost certainly pre-Roman and its nearness to the great sacred site of Avebury suggests that it is a part of that complex.

The distribution of round barrows

No attempt can be made here to give a detailed account of their distribution round the country. There are very few areas where they do not occur, but they show a marked preference for higher ground and tend to avoid clay lands. They occur in large numbers on moorlands and the frequency of their presence on the drier lands of the south is notorious. While some barrows are sited right on the summits of ridges and hills at relatively great heights it has been noted that many are placed along lower ridges which give a false horizon effect when seen from below. But while this relatively high siting is common it must not be supposed that they do not occur on low ground also. Our attention has been drawn to those on higher sites because they have a better chance of survival there, but air-photography has shown that multitudes of barrow rings occur on gravel terraces by rivers, and there are large swarms of these by the Middle Thames and in the Lower Welland Valley. Nothing remains of them superficially because they have been flattened by the plough long since, but their buried ditches survive, and both they, and sometimes the central grave or turf mound, appear clearly as crop marks at the right time of year. There are quite a number on the verges of the Fenland, most of them sited on gravel, but often only a few feet above sea level.

There has been much speculation about the relationship of Bronze Age barrows to the habitations of those buried in them, and the more so because any trace of such sites is hard to find. It would seem obvious that the low-lying examples, at least, cannot be far from dwelling places, and it is an interesting point that in the case of some moorland barrows, pollen determinations made on the old ground surfaces buried under them have shown that cultivated land was not far away at the time of their construction.

It is notable but not surprising that barrows tend to occur in groups. Sometimes they stand in line, and sometimes they occur in nucleated swarms. Some of the best examples of line formations can be seen near Stonehenge where the Normanton Down, Winterbourne Stoke, Cursus, and Rollestone

groups all present this feature very strongly, but there are similar alignments much further north, a good case being the Bully Hills at Tathwell in Lincolnshire. Others are grouped, but whether in lines or groups it is reasonable to suppose that these are the burial places of single families and their connections.

It is notable how barrows congregate round 'henge' sites. The greatest concentration in Britain is to be found in relation to Stonehenge, but each of the other important sites of this kind has its satellite barrows. A northern example is the group of barrows associated with the Thornborough Circles in the Vale of York.

Cairn circles have already been mentioned above in the section on Stone Circles, and field workers should be on their guard against mistaking the former retaining kerb of a round cairn for a stone circle. The existence of retaining walls at the edge of barrows is something which can usually only be shown by excavation, and will depend on the available local material. In the Cotswolds, at least, this retaining wall was not visible when the barrow was completed, but was masked by a revetment which carried the original barrow profile to the ground in an unbroken curve.

In various upland regions of the north of England there are large groups of small mounds or cairns, undoubtedly artificial in origin, which are probably tumuli, but excavation has thrown no clear light on their age and character. The setting in which they are found makes it unlikely that they are stone clearance heaps associated with early cultivation. The best known of these groups is on Danby Rigg overlooking the valley of the Esk from the south a few miles inland from Whitby; there are many more elsewhere on the North York Moors and in the Lake District. They probably contained burials which have been completely destroyed by the action of acid soil. One of a group recently excavated near Sheffield has yielded a stone axe. The background against which they occur in North Yorkshire suggests that they may belong to the Late Bronze Age. Similar examples occur in Wales. (But see *Unchambered Cairns*, p. 51, and *Cairnfields*, p. 52).

It is usual for tumuli to be built mainly of the material which comes from a surrounding ditch, but those which have no ditches are built of surface scrapings, piled turf, or gathered stones. Excavation shows many variant practices of constructional detail with which we are not concerned as they cannot be appreciated without digging, but it is worth noting that it is common for the burial to be covered by an inner mound of turf or darker soil. The barrow is completed by throwing up the product of ditch digging, and when the whole structure has been reduced and ploughed over the central dark patch often shows clearly. There is usually a strong presumption that a mound is a barrow when there is no pit nearby from which its materials could have been got.

As Bronze Age barrows are often between three and four thousand years old it follows that they will have suffered much from time. While a number of very obvious and relatively undamaged barrows may still remain to be found it would be idle to pretend that the chief field of discovery is not now the detection of almost completely obliterated examples, or ones which can only be picked up easily with the aid of air-photography. Though most easily recognised when standing on open unploughed ground like the Wiltshire Downs, barrows also occur on land that has long been cultivated. They can be recognised by slight swellings in the ground and by differences in the colour of the soil. In districts of oolite formation like the Cotswolds they are often indicated by the presence of a large quantity of slate-like slabs of no great size associated with a mound. Care must be taken to distinguish such signs from old surface quarries which may have been ploughed over. Quarries may be recognised by the presence of many stony patches together, and by the presence of depressions as well as elevations. In general where quarrying

has taken place the depressions are more numerous than the elevations. In any kind of country the presence of a pit close to a mound, and of the same size, is generally sufficient evidence that the mound in question is not a barrow. It is more likely to be the materials thrown up in making a pond, now disused and dry, or trial diggings for industrial purposes.

The buried ditch of a barrow will often show up very clearly in a growing crop when observed *on the ground*. This kind of observation was recorded at least two hundred years ago, and has been commonly made, if not understood, by country dwellers time out of mind. In chalk countries barrows which have consisted mainly of this material and have been levelled make a large whitish smear across the part of the field where they have stood. This will be specially apparent in winter.

Enclosed cremation cemeteries

This term is applied to a class of small monument found widely in upland parts of Great Britain, and the full extent of its spread has not yet been fully determined. 'Burial circles' might be as good a name, but the essential thing is that it is an enclosed area containing cremations which may or may not be placed in urns. The surround is a low unbroken bank of earth or rubble which is sometimes garnished with a certain number of stones set upright which can give the effect of a small stone circle. This is to be distinguished from the remains of the kerb formerly surrounding and supporting a barrow or cairn. Where rubble predominates in the surround the whole might be called a ring cairn. In any case the presence of cremations can only be shown by excavation.

These sites occur on high ground in Wales generally and a good example is the group of circles on the moor of Cefn Coch overlooking Penmaenmawr. These are various, the largest and most obvious, known as the Druids' Circle, being eighty feet in diameter and set with a number of upright stones. Other examples are known on Stanton Moor and elsewhere in Derbyshire. Our knowledge of them in Scotland is due to the work of the Scottish Commission. They have been found in parts of Clydesdale, Tweeddale and Peeblesshire wherever the survival of ancient undisturbed pasture has favoured their preservation. The typical form consists of a circular embanked area varying between twenty and a hundred feet in diameter. The surrounding bank is normally low and about ten feet wide, and its general appearance has led to mistaken identifications as hut sites or sheep folds, depending on size. The interior of most examples is featureless but there are two variations from the normal, one in which there is an inconspicuous mound at or near the centre, and another in which a shallow groove runs all round the flattened crest of the low surrounding bank. These little ring-works contain cremation pits with or without urns and the present view of their dating suggests the period 1,500-1,000 B.C., well in the Bronze Age. Cultivation destroys them and as they have no ditch it is doubtful if they will be picked up easily, on air-photographs.

Iron Age barrows

The distribution of barrows known to belong to the Iron Age includes isolated examples in Hampshire, Cornwall and near Bristol, but the main grouping is at present in East Yorkshire. The best example is the numerous group of small burial mounds called the Danes' Graves near Driffield, and there are others in the same area at Arras and Hessleskew. Among them were some examples of chariot burials, or perhaps more correctly, cart burials in which the dismantled parts of a wheeled vehicle have been interred with a body, and the finding of another example at Thornham in North-west Norfolk, taken along with one in Lincolnshire, has extended their distribution to include most of Eastern England from the North York Moors to Norfolk.

So far Iron Age burials have not been found in large numbers in Britain although it is in the latter part of this period that the population must have

reached its prehistoric maximum. When inhumations are found they are often accompanied by rich grave goods like those found at Birdlip on the edge of the Cotswold escarpment overlooking Gloucester. Though enclosed in cists these do not appear to have been covered by barrows, and the same is true of the late Belgic cremation cemeteries found at Aylesford and Swarling in Kent. In the absence of any surface indications the field worker can do nothing to promote the discovery of such burials, but it is of great importance that all instances should be carefully studied and recorded.

The only certain Late Iron Age example of a burial in a barrow seems to be the remarkable interment found in the Lexden tumulus to the west of Colchester in Essex. This was the rich burial by cremation of a leading man who was in a tributary relationship with the Roman Empire before the Claudian conquest, as various significant objects buried with him show. He may have been Cunobelinus, the most powerful king in pre-Roman Britain. The finds from this barrow can now be seen at the Castle Museum in Colchester.

Roman barrows

The Lexden barrow may be an anticipation of the barrows of full Roman age and content which have been recognised in many parts of England. Their distribution was formerly thought to be confined to the east and south of the country, but recent work has shown that they may occur as far north as Hadrian's Wall and as far west as South Wales. The most northerly certain occurrence is at Riseholme outside Lincoln.

The distinctive feature of the Roman barrow is its relatively large size and its high, almost conical, profile which, in well-preserved examples, often shows a slightly flattened top which is thought to have carried some kind of stone or wooden monument, though no certain sign of one has ever been found in Britain. The siting of Roman barrows tends to follow contemporary burial custom in often being close to, or on the verge of, Roman roads; the presence of such barrows has occasionally acted as a clue to a line of road hitherto undiscovered. But some of them are close to known Roman villas and may be regarded as the burial places of a land-owning family. Sometimes they have a more 'prehistoric' type of location as at Holborough in Kent or on Limlow Hill in Hertfordshire, but in the first case the Pilgrim's Way is not far off in full view and at Limlow the site looks down from a distance of three quarters of a mile at the Litlington villa from which its dead almost certainly came. Perhaps the most imposing group which survives is that known as the Bartlow Hills in North-west Essex, but those who go to see them are warned that their present form and profile were restored by Richard Neville in 1840. The contents of Roman barrows are very distinctive. They are plainly Roman and sometimes the burial is in a brick-built chamber as at Rougham in Suffolk.

Anglo-Saxon barrows

The existence of barrows belonging to Anglo-Saxon times and people has been mentioned above and they will be dealt with in the section below covering post-Roman antiquities. (See p. 99).

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Unchambered cairns

A chamber implies a structure to which there can be access and cairns without this feature are common in regions where stone is plentiful. This means that they will generally be found in the more upland areas of the North and West and they are the equivalent of the mainly earthen barrow or 'tumulus'.

Scotland is the classic region for cairns in Britain. Their distribution follows the pattern of settlement imposed on the primitive life of the country by its deeply indented coastline, numerous islands, and tracts of mountain waste. Over much of the country the more favourable grounds are thinly scattered: conditions for settlement were better in the east and south, but the character of the country often dictated the settlement of early groups in isolated patches of country where their monuments were liable from this very isolation to develop locally variant forms. A faithful treatment of all these peculiarities is beyond the scope of this work and from the field point of view unchambered cairns do not differ very much in external appearance except in size. Such cairns can be very large, exceeding 100 feet in diameter and twenty feet in height, but these are exceptional and many which are known to have existed have long been destroyed. Today most of the survivors are not so large. In a stony country a cairn can be put together quickly when there are many willing hands and it can just as swiftly be demolished in more recent times when it obstructs cultivation or when its materials are required for building.

The burials under these cairns are usually by inhumation, but there is cremation also. Box-like cists made to contain the dead are common under cairns. They are covered by cap-stones, sometimes of great size, and can be cut in the solid rock or made from slabs of stone set on edge in the ground. Most are well into the old ground surface, but this is not invariable.

The finding of cists containing Bronze Age burials while ploughing is a common thing in Scotland, usually through the displacement of a cap-stone, and it is reasonable to suppose that a proportion, if not all, of these were once covered by cairns. It is unusual to find more than one cist under a cairn, but this does occur. Burial cairns do not normally have surrounding ditches so that this feature, which so often betrays the former existence of a destroyed barrow in the South, will not help in siting a cairn which has been completely removed. Cists vary in size, some being large enough to contain fully extended burials while others are smaller and accommodate them in the crouched attitude or as cremations.

The small cairns which can often be found in groups are usually regarded in the first instance as being clearance heaps connected with early cultivation. Sometimes the general circumstances of the site make this obvious, but in a large area between the Highlands of Scotland and the Tyne, at least, we must be prepared to recognise a small type of burial cairn which occurs in groups and can easily be mistaken for stone clearances. The distinctive feature of this type is its neatness and regularity when compared with the more casual forms assumed by clearance heaps. The diameter of these little cairns varies between ten and twenty feet and a recent excavation by the Scottish Commission in Peeblesshire has shown that the one examined covered a cremation scattered on the old ground surface under the cairn while it was also surrounded by a narrow, deep ditch carefully filled with rammed rubble so that it gave no sign of its existence on the surface. Another example has been examined in Northumberland with the same result and material was found which dated the deposit to about 200 B.C. The finds add another complication to the archaeology of the northern moorlands, and all groups of small cairns will have to be looked at critically before they can be explained as due to stone clearance.

Cairns have been erected in large numbers at all times for many purposes other than burial. Examples are the summit cairns on hills and boundary marks. Some commemorate forgotten events and in Scotland it was an old custom to set them up in places along the hill tracks where corpses rested on their way to burial.

This makes the positive identification of burial cairns an uncertain business without excavation, and it will be rare to find a genuinely ancient cairn in good condition. It is liable to have been known as an antiquity centuries ago and to have been pulled about in the search for treasure. The siting of a cairn will often suggest that it was not built to meet any relatively modern need, and the existence of a kerb, or signs of a cist, or even unusually large stones in its make-up, can all be clues to a genuine burial cairn. Local tradition will also help to sort out the ancient cairns from the new.

Cairnfields

The previous section on cairns has shown that it is no longer possible to dismiss all clusters of small cairns in upland regions as being stone clearance heaps. But subject to the existence of the small burial cairn, recognisable by the neatness and regularity of its form, there can be little doubt that the majority of these cairnfields are relics of early cultivation. They are found at medium heights up to about 1,000 feet above sea level in Wales, Cumbria, the Pennines, the North York Moors, Northumberland and in many parts of Scotland. Clearance heaps can vary a good deal in size and show no regularity

of size or plan. While some are on open ground others are piled on outcrops of rock which are particularly convenient as places for disposing of unwanted stones. This may only be apparent if they are pulled to pieces but in such cases they tend to assume the outline of the outcrop and can be very irregular in plan. The ground on which they stand is often very poor, but it is usually capable of subsistence cultivation and was probably more so under more favourable climatic conditions. A careful search will often show associated hut sites and even field boundaries in the form of long rickles of stones. The close setting of some of these heaps suggests that no normal plough cultivation was concerned but only work with the hoe.

The age of any cairnfield is uncertain, but that some of them are prehistoric can be inferred from the habitations with which they are associated; although the object of these stone heaps is to clear ground for cultivation burial cists are sometimes found contrived in them as secondary features. These are fairly convincing testimony of great age. In any case they are unlikely to be very recent because with the development of better agricultural methods, even in the absence of a traction plough, cultivation plots have tended to assume more regular shapes and cleared stones to be regularly piled as in the 'consumption dykes' of Aberdeenshire. Moorland fires can improve our knowledge of ancient conditions. It is difficult to make any assessment of the purpose of a group of small cairns when it is practically buried by moorland plants and peat, but after a big fire it is sometimes plain that there are stone-free plots among the heaps, and these can be further defined as former cultivations by lines of gathered stones round their edges which were invisible before.

See:—

ANGUS GRAHAM: *Cairnfields*, P.S.A.S., xc, 1956-57, 7-23.

ANCIENT DWELLING PLACES AND OTHER INDICATIONS OF PERMANENT SETTLEMENT

These are one of the principal concerns of the field archaeologist, and the success with which they have been identified so far varies a good deal with different periods and areas. It is proposed to deal with this subject first as it mainly affects England and Wales and later to give special consideration to the peculiar features of local life in Scotland during the Iron Age. Reference has already been made in the Palæolithic and Mesolithic sections to the earliest forms of dwelling places known in Britain; defended sites and the traces of agriculture, which are themselves eloquent of settled life, will be treated separately later. Other kinds of settlement between the Neolithic period and the Roman Conquest will now be considered.

Today many more easily visible traces of prehistoric settlements and dwellings of various kinds survive in the Highland zone than in the lower lands of the Midlands, South, and East. The reasons for this are self-evident. Stone enters largely into their construction even in their most primitive form; they are often in outlying districts free from modern interference and, unless deliberately destroyed, can in some measure survive indefinitely as visible surface features. In lowland areas wood and other perishable materials were used, and any structures, great or small, made of these vanish leaving no easily recognisable trace. Their details can only be got by excavation.

Caves as dwellings

Caves are seldom comfortable places, but as they are liable to have been used as casual shelter at any time from the Palæolithic down to the present day they must be mentioned. At one end of the range of their occupation is the primitive hunter and food-gatherer and at the other the sheep-stealer going in fear of transportation or hanging. In between come all sorts of fugitives and vague folk living on the edge of the society of their time. Thus, while the usual finds in habitable caves tend to be poor and scrappy, things of real importance can turn up, witness the hoard of bronze objects found in the Heathery Burn Cave (now quarried away) in Co. Durham. When people take refuge in caves they may bring their treasures with them, but in general the chief contribution which caves can make to archaeology in Britain is in the Upper Palæolithic phase when they serve to localise and concentrate traces of the folk of that period which can only be found by mere chance on open sites.

The Neolithic period

Sites attributable to the different Neolithic cultures are spread over the whole of the British Isles. They have their regional variations, but there are few habitable areas where something of this period has not been found and it is clear that Neolithic folk made much use of communication by sea. We know that this phase lasted for at least two thousand years and possibly longer. To cover this great stretch of time there is little in the way of visible remains with a domestic context if we except the enigmatic 'causewayed camps'. Objects are found which belong to the everyday life of the period but they do not tell us anything about the kind of dwellings lived in by Neolithic people. This is in marked contrast to the field evidence from the Continent where much is known about wooden houses belonging to this period, often large and grouped in considerable villages.

This requires some explanation. It is now recognised that on the chalk lands of Britain, which certainly carried their fair share of people in Neolithic times, natural solution processes working through rain and weather over the period of about four or five thousand years down to the present day have lowered the general level of the surface of the chalk sufficiently to affect this problem. Thus post holes and other features of dwellings which were contrived in the

surface of the chalk as it existed in Neolithic times are now 'in the air' and the most that can survive is some occupation rubbish. Post holes sealed under barrows and earthworks have, on the contrary, been protected from this erosion by the overlying mass of upcast. To survive without such protection a post hole would have originally to be large and deep and even then would come to us in much truncated form.

Authentic finds of Neolithic houses in Britain are few. On Haldon Hill, south-west of Exeter, the site of a light timber building measuring about 20 feet by 15 feet in plan has been found, and at Clegyr Boia, near St. David's in Pembrokeshire, there is another rectangular structure of about the same size. A group of round huts outside the defences of the later Iron Age hill-fort at Carn Brea in Cornwall also contained pottery which can safely be claimed as Neolithic. There are also the exceptional sites in the Orkneys of which Skara Brae is the best example where there are groups of semi-subterranean huts with connecting tunnels. The building of these was made possible by the use of a local stone which splits into long slabs. The culture of these far northern sites is Secondary Neolithic and, owing to the exceptional local conditions, their absolute date is uncertain. There can be long survivals in isolated places. All of these sites are off the chalk and are relatively unaffected by erosion.

On at least seven sites in various parts of England groups of shallow pits have been found associated with much evidence of Neolithic habitation. They are both on and off the chalk and the most fully examined one is at Hurst Fen near Mildenhall in Suffolk. The pits may have been for storage, though they do not seem very adequate, and there is no certain trace of associated structures, or at least of any structures which would require uprights making any serious penetration into the soil. Some burnt daub was found on a site of this kind on Risby Warren in Lincolnshire, but this need not have come from a hut wall. In contrast to this poverty there is the evidence about Neolithic houses which seem to be implied by the mortuary house sites found under long barrows, and to a considerable extent dictating the form of these monuments. Long rectangular and even trapezoidal buildings of substantial wooden construction like Continental examples of the period seem to be implied, and in the case of Nutbane the house was of very massive construction. Perhaps there may be some social or seasonal factor concerned in the discrepancy between these structures and the groups of shallow pits which, on the evidence, seem little better than bivouacs.

At Lough Gur in Ireland both rectangular and round houses have been firmly identified as Neolithic and conditions cannot have been very different in Britain. Here is a problem for the field worker. If we except stone-built structures in the Highland zone the only hope of identifying domestic sites deliberately, is by finding scatters of the right kind of pottery and other material, and following up by excavation of what seem to be the most hopeful sites. Casual finds of this kind are now made quite frequently and it is the field worker's job to follow them up.

The Early and Middle Bronze Age

Matters are in much the same state during this period and for the same general reasons. With the end of the Neolithic we now enter on a long stage which lasts right down to the Roman conquest in which all known dwellings have a round plan and the rectangular buildings mentioned above are not repeated.

The great company of round barrows implying population and the frequent finds of pottery, bronze weapons and tools of high quality belonging to the Bronze Age suggest that Bronze Age dwellings should be often found. So far they have been very elusive. A search through the records will show many signs of local settled life of a kind, but never in association with anything much

more impressive than open hearths and rubbish pits. As in the Neolithic there is the same contrast with the Continent. The houses are not absent for the lack of the wood-working tools and the skill with which to build them. Those who made the timber causeways belonging to this period which have been found in the Somerset Fens and East Anglia did not live in the open air.

In Wessex the relative brilliance of the culture of those responsible for the final constructional phase at Stonehenge is shown by the rich contents of their graves, but we have no real idea of precisely where and how they lived. In this dilemma the recipe for the field worker is the same as that for the finding of Neolithic houses. Perhaps some of the Wessex sites are also a total loss through erosion, but the careful noting of the occurrence of domestic rubbish should ultimately provide the clue. There is much more to Great Britain than Wessex and these cultures were country-wide.

The Late Bronze Age

As we come into the earlier part of the last millennium B.C. the question of dwelling sites becomes less difficult and, apart from casual finds, there are three types which can be assigned to this phase.

1. Agricultural sites.
2. Pile dwellings and analogous structures in waterlogged situations.
3. Hut settlements in the South-west.

Agricultural sites

There is conclusive evidence which need not be rehearsed here that the cultivation of food crops was practised in Britain in Neolithic times, but we cannot point to any areas which were certainly under cultivation then. With the Bronze Age the position improves and the last forty years have brought clearly recognisable traces of organised arable farming belonging to the period. Fuller details of this are discussed below (see p. 141). Dwellings of this period which were farmhouses have now been recognised in various places in the South, South-west, and North. There are important sites in Sussex at New Barn Down, Plumpton Plain and Itford Hill, all in the neighbourhood of Brighton and Lewes. Here round houses set in compounds are associated with systems of small rectangular fields and the cultural background is that of the Late Bronze Age. A similar situation exists on Rockley Down north of Marlborough and at Sydling St. Nicholas, Dorset, and there must be more examples to be found on the chalk, but some of the most dramatic evidence has come from Gwithian in West Cornwall where, owing to the periodic covering of land near the sea by sand blows, it has been possible to detect more than one level of ancient ploughing by stripping soil and exposing the pattern of plough-marks in underlying sand. The precise range of these sites in time is not yet determined, but the oldest are older than the Sussex examples and may begin at the end of the Early Bronze Age. The huts associated with these fields were sub-rectangular and not round and thus may be a local hang-over from Neolithic practice. Another example of a probable Late Bronze Age farmstead is at Albury in Surrey where a recent excavation has shown round huts of this date closely associated with plough-marks in underlying sand which are either contemporary with them or slightly older. The only surface indication was a scatter of pottery, and even this was only thrown up by the bulldozing of topsoil in advance of the extension of a sand pit.

The moors of North Yorkshire are another area with many traces of cultivation which go back to the Bronze Age and here the huts are also round. In this peat and heather-covered area it is the chance occurrence of moor fires which alone can give a clear view of these settlements. Normally little shows but the tops of a few large stones and the upper parts of small cairns, which may be

places of burial or stone clearance heaps, but when the area has been burnt off the huts and their associated small walled fields are at once apparent standing on the old ground surface.

Pile dwellings and analogous structures in waterlogged situations

It is certain that these exist, but it is a reproach to British archaeology that none have been properly excavated so that we are ignorant of their plan and general arrangements. It may not even be correct to call them pile dwellings for they may, in fact, be more like crannogs or artificial islands in which piles only play a part in retaining the substructure on which the dwellings were placed. Work centering on Hull Museum may soon give us more information.

Owing to their siting in wet and marshy places they do not advertise their presence and are only found when ground is drained. Then they may emerge as small islands of higher ground and cuts made through them will show the underlying mass of brushwood and other material. So far sites of this kind have been noted in the valley of the Hull in East Yorkshire, at Brigg on the Ancholme in North Lincolnshire, and in the meres of East Anglia. Most of the latter have been drained, but Barton Mere near Bury St. Edmunds still contains a small island which has been the site of Late Bronze Age finds which may be significant.

The objects from these sites have been chiefly late types of bronze spear-heads and swords, but these are probably only what the finders could recognise clearly as being ancient and less obvious material may not have been collected. The present time, when so much work is being done in cleaning and re-cutting land drains, is favourable for the recognition of sites which, apart from actual finds of distinctive objects, are likely to reveal themselves by the presence of wooden piles, masses of brushwood, animal bones, etc. in section in the banks of watercourses.

An example of this kind, not followed up by excavation, is a site found in the bed of the Trent at Clifton above Nottingham in 1939. Attention was drawn to it when three large dug-out boats and a number of fine bronze weapons were found by a dredger. Before the work was brought to a stand by the obstacle of the sunken boats the workmen had already broken their way through many oak piles driven into the river bed which they called the 'skittle alley'. No doubt part of the site still remains in the bank of the river and the adjacent meadow and we are probably concerned with a riverside settlement of Late Bronze Age date. Sites of this kind are of particular value because their damp conditions favour the survival of much organic matter like cloth, leather, wooden objects and basketwork which are no longer present on drier sites.

Woodwork found in the bed of streams may be of any age. Crannogs were not confined to the Bronze Age and piles may have belonged to bridges or to fish weirs which were a common feature in many rivers until fairly recent times. They may also belong to the sites of old mills, though in this case there may also be traces of dams and channels surviving which tell their own tale.

Hut settlements in the South-west

The granite moorlands of Devon and Cornwall are prolific in signs of pre-historic settlement. Dartmoor is the classic area but the conditions there apply equally to Bodmin Moor. On Dartmoor the best known sites are the pounds, more or less circular enclosures one hundred feet or more across, surrounded by the remains of a stone wall. They contain round huts of various size, chiefly small, with dry-stone walls backed outside by banks of earth and small stones. Sometimes the stones used are very large, but this depends on what size of material is easily available. A well-known example is Grimspound which is deceptive because the surrounding wall has been doubled in modern

times, but otherwise it is characteristic of the type and the only variation which occurs is found at Legis Tor where more than one enclosure has been amalgamated into a large pound of irregular form. These are probably the oldest recognisable dwelling places on the moor and they depended on cattle raising and some cultivation.

Another more numerous type is the large unenclosed village containing many round huts of the same kind as those found in the pounds. Some of the huts stand free and others are linked together by the walls of enclosures. A good example is at Standon Down 1,300 feet above sea level in Western Dartmoor and Roughtor is another on Bodmin Moor.

The third type is very similar to the second but the groups are much smaller. Types two and three both have small fields nearby and practised agriculture where none would be attempted today.

The only other type of settlement on the higher moors before post-Roman times consist of small groups of larger huts than those mentioned above. Their construction is more developed with double stone walls filled in with earth and signs of roof supports within. This distinguishing feature can still be seen even in their ruin if they are examined carefully. Good examples with associated fields on Dartmoor are at Foale's Arrishes and Kestor and in Penwith on Trewey Down above Zennor, but a warning must be given that the obvious long strip fields at the first site are of much later date than the huts.

The finds from all these settlements show that their occupation stretches over the whole of the Bronze Age, but life on the higher moors ends with this period and they were abandoned for lower ground in Iron Age and Roman times. The reason for this was climatic deterioration. The upland of Penwith in West Cornwall, however, nowhere exceeds 850 feet in height and so continued in occupation.

In the Iron Age the most notable type of south-western hut settlement is that confined to Penwith and best seen at the Chysauster site which has been excavated and made available for inspection. Here the individual houses stand well free from each other and belong to a courtyard type. The form is oval and the long axis approaches 100 feet in length. The surrounding wall is of very massive construction with an open court in the middle, and accommodation is provided by contriving a number of larger or smaller rooms in the thickness of the wall which sometimes still stands to a height of six feet. There are numerous associated garden plots and small terraced fields and the hut groups of this type are often quite close to the hill-forts of the area. The courtyard type begins in the Iron Age but continues to be used in Roman times, and it bears some resemblance to the wheel-house of Scotland.

The Iron Age

It is in the Iron Age that we find the largest number of identifiable prehistoric dwelling sites and knowledge of these has much increased in the past thirty years.

Native Iron Age life in England and much of Wales was diverted into new ways by the Roman conquest more by the introduction of many of the minor trappings of Mediterranean civilisation than by any wide disruption of the old pattern, but outside the more outlandish areas the social and political effects of the conquest were in no doubt. In contrast to this the life of much of Scotland and certainly of most of the country north of the Forth-Clyde isthmus, was little affected, and this phase of Scottish life has characterised types of settlement which must be dealt with separately below. In Scotland the Iron Age way of life was not seriously interrupted and merged insensibly into the early Middle Ages. What follows immediately is chiefly concerned with England and Wales.

Iron Age dwelling sites are still visible as ground features in many places on the uplands of most of England and Wales, but this does not mean that they were still not more prolific in lowland situations. Air-photographs show them to be widespread and particularly so on the gravel areas of river valleys. But little or nothing of these lowland sites appears plainly on the ground, for the good soil conditions on their sites have ensured that they have been under plough ever since. Scatters of domestic rubbish on the ploughland will reveal them, but this may have degenerated into small scraps in the process of time and become distributed over a large area so that the original nuclei from which they derive may be hard to recognise. Any details of the invariably round hut forms, storage pits, land boundaries, etc. can only be got by air-photography and excavation, and this may be less easy to interpret than on the chalk uplands.

In times past the Ordnance Survey often described recognisable sites of this kind as 'British villages'. They cannot properly be so described today. The normal Iron Age rural settlement consists of a farm standing in its compound and surrounded by its characteristic system of fields which may or may not be easily traceable. Sometimes these farmsteads are isolated, but quite often they are grouped into hamlets containing as many as half a dozen of these units. Anything like the larger nucleated villages of Anglo-Saxon times is rare, and there is little which could be described as a village by later standards outside a number of hill forts. Their dependence on the latter as local tribal centres can be deduced when the geographical distribution of the forts is considered.

The individual farmstead continued to be the normal Iron Age dwelling site in Southern Britain. In the main they seem to have been little affected in general design by the Roman conquest even though the inhabitants acquired a good deal of portable material belonging to the Roman civilisation. Excavation under some Roman villas has shown that here and there the more prosperous and aristocratic farmers became Romanised and substituted the buildings of a villa for the old hut and compound, sometimes on the old site. Much more work will have to be done, however, before we have any idea what proportion of Roman villas are sited where they are a result of this process.

The best examples of the larger groupings of huts amounting to hamlets can be seen in parts of the country where the use of stone in hut-building and the remoteness of their situation has helped their survival. They occur in Westmorland, Northumberland, Cornwall, and Wales. Ewe Close in Westmorland is a good example of an essentially native site falling within the Roman period and Chysauster, the typical Cornish example, has been excavated and left in condition for inspection under the care of the Ministry of Works.

Some few hill forts contain just enough evidence of extensive permanent occupation to permit the use of the term 'hill town' but this is a very relative term and owes its doubtful use to the interest raised in this subject by the excavation of Maiden Castle in Dorset in the thirties. Concentrations of as many as a thousand souls in one community appear to have been rare in prehistoric Britain. At the close of the period, when the influence of Rome was being felt in politics and trade, the gathering of folk at some of the Belgic *oppida* like early St. Albans and Colchester must have been considerable, but there is nothing to be compared with the great contemporary *oppida* on the Continent like Mont Beuvray (Bibracte) or Manching on the Danube plain of Bavaria.

Farmstead sites are easily recognisable on the open downs by the presence of hummocky banks and mounds closely set over a small area; there may be the remains of a slight surrounding bank, roughly oval in plan, possibly with an evident entrance and other low banks setting off from it. The turf grows evenly over all as on the surrounding downland and there is some visible order and arrangement. With a little practice it is not difficult to distinguish

these ancient sites from old flint diggings and shallow quarries which are often found on the chalk lands. Such comparatively modern disturbances of the soil, often made to get flints for road metal, consist mainly of extensive shallow pits which sometimes amount to a general lowering of the surface over a large area; the mounds seldom rise above the natural level of the soil; there is usually an abandoned working face to be seen and the old diggings respect the present system of land boundaries. On the other hand the presence of potsherds in the molehills and rabbit scrapes, and of black soil, is a sure sign of ancient habitation. With the decline of the rabbit it is less easy to find scattered material of this kind than it was ten years ago.

The following books and articles may be consulted:—

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 AUDREY WILLIAMS: Clegyr Boia. Arch. Camb., cii, 1953, 20-47.
 C. HOULDER: The excavation of a Neolithic settlement on Hazard Hill, Totnes. A.N.L., April, 1951, 165-166.
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BRONZE AGE

- J. F. S. STONE: A settlement of the Beaker period on Easton Down, Winterslow, South Wilts., W.A.M., xlv, 1931, 366-372.
 ———: The Deverel-Rimbury (Late Bronze Age) settlement on Thorny Down, Wiltshire. P.P.S., vii, 1941, 114-133.
 G. P. BURSTOW and G. A. HOLLEYMAN: The Late Bronze Age settlement on Itford Hill, Sussex. P.P.S., xxiii, 1957, 167-212.
 J. V. S. MEGAW, A. C. THOMAS, and B. WAILES: The Bronze Age settlement at Gwithian, Cornwall. P.W.C.F.C., ii, No. 5, 1961.
 H. O'N. HENCKEN: Archaeology of Cornwall and Scilly, 97-103.
 C. A. RALEGH RADFORD: Prehistoric settlements on Dartmoor and the Cornish Moors. P.P.S., xviii, 1952, 55-84.

IRON AGE

- GENERAL PITT-RIVERS: Excavations in Cranborne Chase, i, 1887, (Rotherley and Woodcuts), but see also C. F. C. Hawkes, A.J., civ, 1947, 36-49.
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 A. BULLEID and H. ST. G. GRAY: The Glastonbury Lake Village, 1915.
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- R. J. C. ATKINSON: Worms and weathering. Ant., xxxi, 1957, 219-233.

Iron Age dwellings in Scotland

In Scotland dwelling places of the Iron Age are somewhat more various than those of the South. There are special types which depend for their form on the conditions which occur in the islands and the North where, owing to a vigorous tradition of dry-stone building, evidence for the form and details of construction has been able to survive in a way impossible where stone was not used. But while it is not difficult to find the collapsed remains of structures of this kind, their secure identification in detail can be difficult in the absence of excavation. Stone heaps may have some recognisable structural detail still visibly emerging, but will have to be cleared to show the plan of the original building. Unfortunately the gathering of a mass of suitable stone to build a structure like a wheel-house is an invitation to the looting of this stone for use in modern settlements. Also many of these early structures were rebuilt

again and again on the same site in varying forms. Thus archaeological rubbish picked up on their surface today may have little or no connection with that left by the original builders.

In the southern part of Scotland the Royal Commission on Ancient and Historic Monuments (Scotland) has done much work in connection with its inventories of Roxburghshire and Peeblesshire since 1947. Some order and understanding has thus been brought into the large number of minor settlement sites which occurs in the Lowlands generally, though still more is required. Work in Northumberland from the University of Durham has also shown that these or similar types extend over most of that country.

There is still a great deal to be done on minor settlements in Scotland. They abound in some areas but large subjects like the rural background of the Pictish kingdom are still nearly a blank. In the absence of many finds of datable material a proper understanding of their distribution, probable age and social function can only come from much field work resulting in the recognition of distinctive types, their plotting on distribution maps, etc.

Hut groups

Ancient groups of round hut sites occur in many parts of Scotland in clusters which seldom contain more than twenty. Their siting at or near the 1,000 foot contour is comparable to that of many in North Wales and they are sometimes accompanied by traces of cultivation plots, stone clearance heaps and lines of stones marking field divisions. The huts average about thirty feet in diameter and the walls are usually of dry stone construction, one wall inside and one outside with the cavity between filled with earth and rubble. There is little sign of any internal divisions though hearths have been found at or near the centre of the hut. Finds of datable rubbish are rare and the high siting of many suggests that they may have been occupied well before 750 B.C. when different climatic conditions could have favoured settlement at higher levels than normal today. The occasional finding of querns confirms the belief that agriculture was practised but little is known about these sites as yet.

Not all small ring-works are hut sites (see Enclosed cremation cemeteries, p. 49) nor are all apparent stone clearance cairns the real thing. (See Unchambered cairns, p. 51).

Palisaded enclosures

The next class is a type of enclosed site which is being increasingly recognised on the 'dry' moorlands of the Lowlands, the Cheviots and Northumberland. It is generally oval in form and, while some stand in summit situations, most are on lower slopes. The overall dimensions are usually of the order of 100 feet by 200 feet. These sites were surrounded by a single or double palisade of close-set timber. Sometimes traces of round huts can be seen inside, but they are usually present whether visible or not. Some of the sites have been enlarged at least once and the huts rebuilt. The fact that timber contributed so largely to the security of these homesteads and small villages was first noted from the air. At Hayhope Knowe in Roxburghshire the continuous slots in which palisades had stood were seen on air-photographs. These were found to be also quite visible on the ground and were further proved by excavation. A palisade site of this kind appears as a continuous narrow groove in the soil though naturally, after such a lapse of time, it may take some looking for. Sometimes, as at Harehope near Peebles, there is a less common type where the site is surrounded by a shallow ditch with slight banks on each lip. This appears to be a feeble arrangement until it is realised that these banks contained palisades whose packing stones may still be seen sticking out here and there along the line.

It is believed that these are the earliest type of Iron Age defended site in Scotland and that their origin may be as early as 400 B.C. while examples,

some of them much modified, last into Roman times. Field work alone cannot give a complete idea of their distribution because the excavation of normal bank and ditch earthworks in Southern Scotland has already shown that palisades were liable to be superseded by defences of this kind. It can only recognise those in which a palisade was the only form of defence or where the defences of the later reconstruction did not follow the lines of the palisade.

'Scooped enclosures'

These occur mainly in the Border area round the Cheviots but have been found elsewhere in the Lowlands. They are usually placed along the edge of low terraces overlooking streams and are formed by scooping out a considerable depression opening out towards the water. This could be mistaken for an abandoned gravel pit. The intention was to make a comparatively sheltered level area or compound in which one or more round huts were placed. Occasionally there are several sites adjacent to each other and they are separated either by unexcavated ridges of soil or by rubble walls sometimes faced with large boulders. The hut sites may appear as shallow scoops or slight stone foundations. The remains of secondary rectangular structures are sometimes found in these enclosures showing their re-use at a later time.

We are not clear about the age of these sites. Present indications are that they are native homesteads which have their origin within the Roman period and they may continue through secondary occupation well into the Middle Ages.

Unenclosed platform settlements

During the course of its recent work in the Lowlands the Royal Commission on Ancient and Historic Monuments (Scotland) has recognised another distinctive type of Iron Age dwelling site. This is known as the unenclosed platform settlement and is quite distinct from the scooped enclosure. The known distribution of these sites suggests that they may occur in practically all parts of the Lowlands and possibly more widely still.

They are normally sited on hillsides where they have the appearance of small quarries cut into the side of the hill. The excavation has a crescentic form in plan and the excavated material is arranged down the slope of the hill so as roughly to double the level area produced by the cut. The plan of the level area is oval or circular and diameters range between 25 and 80 feet. If the slope into which the cut is made is steep the scarp at the back of the platform will be correspondingly high, but there seems to have been no attempt to pile any material round the upper edge of this scarp to form a 'hood' as in the case of Welsh platform house places. The sites occur in groups ranged side by side along the contours and the average number in one settlement is nine. Less commonly they are arranged in tier one above the other. The occasional presence of stone clearance heaps nearby suggests that some cultivation took place.

Excavation has shown that each platform probably carried a round hut with a turf wall faced inside and out by wattle hurdles daubed with clay and supported by stakes set in the ground. The site excavated on the farm of Harehope two and a half miles west of Peebles yielded a piece of pottery which should belong to the beginning of the Iron Age in Scotland.

We now require a wider knowledge of the distribution of these sites and their likeness to small abandoned quarries makes the examination of many slight disturbances on hillsides necessary. The deliberate construction of a platform, their grouping, and obvious signs of age should make for their identification, and they will not be confused with scooped enclosures.

Wheel-houses

We now turn to the islands and the North. The sequence of prehistoric dwelling types is fairly clear here. The Bronze Age courtyard houses as seen

at Jarlshof and elsewhere clearly derive from Neolithic forbears which could have highly specialised forms. The presence of convenient building stone and the need for good shelter in a wind-swept land led later to the development of the special type known as the wheel-house. This is a more or less round structure from twenty to thirty-five feet in diameter with a plan like a spoked wheel without a nave. The outer wall is built up to a good height and thickness with dry masonry and is sometimes cemented with clay. The upper courses tend to oversail the lower ones suggesting a former corbelled roof. A number of radial walls set off from the outer wall towards the centre stopping some way short of it. The eight or so compartments thus formed were roofed by slabs, timber, or corbelling and it may be that the central space, some ten or twelve feet in diameter, was left open to the sky, though there has been disagreement on this point. Some claim an overall roof with timber members while a moveable covering of hides has also been suggested. Details of interior design vary. Sometimes all the compartments can only be entered from the central space; sometimes several connect with each other through the radial walls to form a suite, and there is an aisled type in which the radial walls stop short of the outside wall in plan, thus creating a continuous passage right round the interior of the house at the back of each compartment. Wheel-houses are associated with other round and rectangular structures used as workshops, stores, etc., and there may also be an earth-house. (See *Earth-houses*, p. 65). Some wheel-houses are certainly prehistoric, but most of them seem to have been built and occupied in the early centuries of our era. There is dispute about their origin and Sir Lindsay Scott would see them as the result of an immigration by sea from the Iron Age 'B' area of South-west England, but they certainly belong to the Iron Age, whatever the details may have been. The slight variations in their design and relationship to accompanying structures are not important for our purpose. They are liable to have been re-occupied by squatters who used the ruins for shelter at various times right into the Middle Ages.

Wags

In Caithness there is the local variant structure known as a wag. The sites of these often lie away from the best land up in the hills, sometimes solitary or in small groups. The dwelling part is represented by a strongly-built hut circle of ordinary plan, but to this is added an oval stone-built chamber about twice as big as the hut with its floor excavated somewhat below the general ground level. This annexe contains an arrangement of stalls contrived with large slabs of stone and it has been claimed that the whole was roofed with the specially long slabs available in the area. Wags have been interpreted as pastoral sites specially designed to give cattle protection against wolves. They were in use in the early centuries of our era.

In conclusion it must be mentioned that all these northern sites contain large quantities of stone and when this has collapsed it is difficult to make out the real character of a ruin without much clearance and even a formal excavation. It may even prove to have been some form of chambered cairn and no dwelling. Many wheel-houses were sited near the shore and here blown sand can be a hindrance, filling up the interior and even burying the whole site so that it looks just like another sand dune. As wind can bury so it can also uncover a site which has been out of view under the sand for centuries. Wheel-houses are sometimes present as secondary structures on the site of brochs and have been built from their fallen materials.

See:—

- J. R. C. HAMILTON: *Excavations at Jarlshof, Shetland*. Edinburgh, 1956, H.M.S.O.
 C. M. PIGGOTT: The Iron Age settlement at Hayhope Knowe, Roxburghshire. *P.S.A.S.*, lxxxiii, 1948-49, 45-67.
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- A. O. CURLE: The Langwell Wag, P.S.A.S., xlv, 80.
- : The wag of Forse, Caithness. P.S.A.S., lxxx, 1948, 11-24; lxxxii, 1950, 275-285.

Hut settlements in Wales

The remains of dry-stone built huts standing singly or in groups are a common feature of the field archaeology of Wales. They have received more attention in the north part of the country partly because they are more numerous there and partly because the work of the Welsh Commission has lain in that area almost continuously since 1928.

Their range in time is long, probably beginning in the Bronze Age and certainly running on into post-Roman times. Among the half dozen different types of hut settlement there are at least three which have a claim to be regarded as prehistoric.

The first are small round huts of poor construction seldom exceeding ten feet in diameter and standing high between the 1,000 and 1500 foot contours. Irregular enclosures bounded by rough walls are associated with them and a characteristic feature is for a hut to be placed where several of these walls meet. They have quite a lot in common with the Bronze Age open village sites on Dartmoor and their relation to the peat which partly overrides them confirms the view that they belong broadly to the same climatic phase. They yield few finds and these are of stone in the form of pounders, saddle querns and the like; on plan and general siting on the hills they can also be compared with the similar groups of huts and enclosures partly covered by peat on the North York Moors as at Iron Howe, Hawaby.

The second type are much like the first, but they are larger and better built with rough dry-stone walling improved by occasional orthostats. They are also found in the upland valleys.

The third type is much more distinctive. The sites consist of two or more concentric circles of dry-stone walling with a round hut in the central area. Excavation has shown no sign of Roman influence in small finds and the enclosed areas inside the outer ring were evidently cattle paddocks. They bear some similarity to the much larger and stronger hill-slope sites of the Iron Age like Milber Down and Y Bwlwarcau. (See p. 70.) There is no positive evidence of their age at present and they could be either pre or post-Roman, but their place is probably in prehistory.

South Wales also has its share of hut settlements good examples of which will be found on the islands of Gateholm and Skomer off the Pembrokeshire coast. No underground features like the fogous of Cornwall or the earth-houses of Scotland have ever been found in Wales.

See: —

- W. E. GRIFFITHS: The development of native homesteads in North Wales. *Ant. c.* 1951. 174-186.

Earth-houses

These are the Scottish version of the narrow underground gallery attached to settlements defensive as well as domestic which is also a feature of Iron Age sites in Ireland and Cornwall. They are also called 'erd-houses' and 'weems'.

Scottish earth-houses seem to originate in the North, but they spread over most of the settled country though they do not seem to be represented in Galloway, nor are there many south of the Forth. They vary a good deal in length, height, and method of construction. The largest known example in Scotland, at Pitcur in Angus, is 190 feet long and large in proportion, but most are much smaller. The normal entrance is down some steps and through a narrow 'creep' which necessitates bending double, but some are more accessible. Sometimes there is also a small side entrance, and a few, as at Grange of Conan in Angus, have an attached underground bee-hive chamber. In plan earth-houses are more or less curved and the excavation of a recently discovered example at Carlungie in Angus has shown that a round hut stood inside this curve. This agrees with observations of the relation of huts and earth-houses which have been made in Aberdeenshire, the North, and the Western Islands.

Earth-houses vary in their mode of construction with local conditions. Sometimes they are cut in the solid rock and in soil they are lined with dry stone masonry or heavy slabs. Roofing is normally by stone slabs but in some cases it is possible that timber was used to support the overlying soil.

There is no space to discuss their purpose here in detail, but while some hold them to have been secret refuges from enemies others regard them as underground storage places. The refuge theory may be valid in Ireland but their general design does not suggest this in Scotland. They are normally liable to be very damp which is not in favour of their use as stores. Their general Iron Age date seems to be in no doubt, and some Angus examples certainly belong to the Roman period. At Crichton in Midlothian one has been found which uses Roman dressed stone. They may also continue well into the days of the Pictish kingdom though there is at present no archaeological evidence of this. Its establishment as a fact would be a valuable contribution to Scottish archaeology.

They are usually found through striking the roof stones when ploughing, as with burial cists, and as they seem to imply a homestead their discovery and investigation will widen our knowledge of what is, in Scotland, an obscure subject.

The other part of Britain in which similar underground structures are found is Cornwall. Here they are known as fogous and bear much the same relationship to dwelling sites as the earth-house at Carlungie. Their plan and mode of construction is the same, but owing to the hardness of granite they are not cut in the solid rock but constructed in trenches dug for the purpose. Occasionally they are partly above ground and covered by a bank of earth. Entrances are usually very narrow with provision for blocking and a sill is sometimes left projecting from the floor to trip an intruder. Several Cornish forts like Halligye and North Treveague have a fogou which acts as a kind of narrow postern giving access to the ditch from inside the defences. This trait is common in Irish raths but unknown in Britain outside Cornwall. When not inside them fogous often occur in the neighbourhood of forts. They often include a round or oblong corbelled chamber of some size opening off the main passage and much charcoal with animal bones, pottery and even blocks of metallic tin have been found in them suggesting that they were lived in to some extent. The pottery covers the late Iron Age and Early Roman periods. Fogous are often badly damaged with cap-stones removed and the interior filled up with earth so that there is still a good chance that some remain to be discovered.

See:—

F. W. WAINWRIGHT: *The Problem of the Picts*, Nelson, 1955, 90-93.

—: *Souterrains in Scotland*, *Ant.*, xxvii, 1953, 219-232.

—: *Souterrains of Southern Pictland*, London, Routledge, Kegan Paul, 1962.

H. O'N. HENCKEN: *The Archaeology of Cornwall and Scilly*, 137-150.

'Pit dwellings'

A warning must still be given on the subject of 'pit dwellings'. The earlier antiquaries were often convinced that our ancestors lived in pits in the ground, and this view was still accepted uncritically as recently as thirty years ago. Most of this delusion arose through the finding of storage pits and dene holes containing much domestic rubbish and ash. Some thought about these holes as possible dwelling places, along with a careful examination of the stratification of their infilling, shows that the presence of rubbish in them is almost always the result of their use for the disposal of ash, kitchen refuse, broken pottery, etc. after their original purpose of storage or chalk-getting had been fulfilled. In fact careful excavation where filled-up storage pits occur will usually show the evident sites of the round huts with their systems of post-holes to which the pits belonged.

Two kinds of hollows have been mistaken for pit dwellings in the past. Examples of the first (which are the largest in size) occur in chalk country. They are shallow saucer-shaped depressions resembling an inverted round barrow. They are of recent origin and are caused by digging to get chalk, clay, or flints. Old clay-pits occur frequently upon the uplands where the chalk is overlaid by pockets of clay-with-flints which have been worked for brick-making and other purposes, often a long time ago. The pits caused by chalk-working (dene holes) are more complex in origin and, in their original form, much deeper. From prehistoric times until almost within living memory chalk has been mined by sinking a vertical shaft through the thin covering layer of chalk-with-flints or gravel; the chalk was brought up and scattered over the fields for fertilising purposes. When this method was given up the underground galleries collapsed, the shaft fell in, and a conical depression was formed. In the course of time the outlines become rounded off and the pit assumes its present appearance. Dene holes are common in the south-east of England, particularly on both sides of the estuary of the Thames.

Examples of the second kind of pit occur on the oolite plateaus of the Cotswolds, especially in the neighbourhood of Stroud (Selsley Common, Minchinhampton, and the Copse at Avening, etc.) They are much smaller and of oval shape with a low mound on one side. They closely resemble the pits dug by infantry to get cover. They are barely six feet in length and two or three feet in width, occur close together, and in thousands in the areas cited. They are far too numerous to be of artificial origin, nor has excavation added any support to this conjecture. Possibly they are the stump holes of large trees.

The problem on ancient dwellings has now passed from the 'pit' to the 'post-hole' stage, and 'pit-dwellings' have gone to join 'Druids' altars' and other lumber of the early antiquaries. Doubt about their character had been growing since 1900, but it was the excavation of the Little Woodbury site near Salisbury in 1938-9 which finally settled the matter. This was an Iron Age farmstead standing in a round compound, the interior of which contained a great number of pits of varying size cut in the solid chalk. The farmhouse was a large circular wooden hut nearly 50 feet in diameter. The careful study of these pits and their contents showed that they were largely concerned with the management and storage of grain crops, and that they were quite unsuitable for habitation. Only a few were in use at one time and, as they quickly became unfit for grain storage, more were dug and the old ones filled up with all the casual debris of the farm, including a large number of burnt flints and much ash. Sometimes there were also masses of burnt clay, broken fragments

of ovens in which the grain was parched before storage. Earlier work in the Salisbury area and elsewhere had revealed similar systems of pits, but they had not been sufficiently extensive to show all the different features which had to be related to each other. The results obtained at Little Woodbury were an impressive demonstration of the need for total excavation if real knowledge is to be gained from any site.

Finally, the only instance of anything resembling a pit-dwelling of the older conception is where advantage has been taken of large holes opened to get material for various purposes, notably for rampart construction. Huts built in these large depressions are not different from the normal except that they get extra shelter by this means in exposed situations. An example of this kind was found in the hill fort of Sutton Walls near Hereford.

See: —

F. C. J. SPURRELL: Dene-holes and artificial caves with vertical entrances. *A.J.*, xxxviii, 1881, 391-409; xxxix, 1882, 1-22.

Lake dwellings

There is a special type of Iron Age site which is not at present known outside the marshlands of Somerset. Two considerable villages have been found at Glastonbury and Meare on the edge of former extensive shallow lakes, and raised out of the water on artificial platforms of earth and stones reinforced with pile work. The dampness of these sites has led to the preservation of a great deal of material normally absent from dry sites which has given a clearer view into the developed technique of living possessed by later Iron Age people. The discovery of another site of this kind is quite probable in this area (several possible ones are known) and will be valuable as giving a chance to apply modern methods to its excavation at all stages.

These villages are abnormal as considerable groups of people living under special conditions. Their siting has a defensive purpose and they are thus analogous to the hill forts of the same period. Their existence does not alter the fact that there is no evidence for any similar village life in the Iron Age over the country as a whole. Some much smaller water sites of the same period have been found in marshy sites at Ulrome and Skipsea in the East Riding of Yorkshire.

In Southern Scotland there was once a number of crannogs or artificial islands in the middle of lochs now drained which carried individual dwellings, but these are not analogous to the Somerset examples except in making use of the protection of water. The Scottish crannogs had a long life from Iron Age times onwards, and some were still in use in the 16th and 17th centuries.

See:

A. BULLEID and H. ST. G. GRAY: *The Glastonbury Lake Village.*

Open-air Cooking places

In ancient times a special way of cooking by boiling was sometimes practised in large wooden troughs made from tree trunks. A trough was set up at a convenient site near water, usually on the banks of a river or lake, or near a spring. It was filled with water which was brought to the boil by plunging in heated stones. These were heated in a near-by open fire and it was convenient to have a good supply of water-worn pebbles handy. Meat was boiled in these troughs and a variant method used a raw hide as a container, a device often used on campaigns. Cooking by these methods at the same place over a number of years produced a great number of fire-shattered stones and much ash which are sometimes heaped up in a crescent-shaped mound with the site of the fire at the centre and the stream forming a chord of the arc.

Sites of this kind are quite common in Ireland where they are known as deer-roasts (*folach fia*). Great Britain also has its share which is most apparent

in the Highland zone. They are quite frequent in North Wales but have not been sought for very diligently over the country as a whole. An example may be quoted which is visible on the former shore line of the big artificial pool which defended the site known as the Berth at Baschurch in Shropshire. Stone heaps are worth noting (they may often be much scattered by cultivation) and the association with water is likely to be a constant feature though drainage may make this water less obvious today. Dating can only be by associated rubbish, though this is seldom reported, and in remote places this method of cooking survived till early modern times. Cauldrons, whether of bronze or iron, were expensive objects until the beginning of the 18th century. At the Berth it can at least be assumed that the stone heap is unlikely to antedate the formation of the artificial pool. The occasional finding of rough wooden troughs may often relate to this practice when they are clearly too small to be tree-trunk coffins or dug-out boats.

Burnt stones, normally flints, can often be found scattered widely over the fields. They are known as 'pot-boilers' though only a modest proportion of them are ever likely to have been used for this purpose. We have already seen above that they were produced in large numbers by the parching of corn in ovens and they can be a clue to the siting of Iron Age farmsteads. Many of them, however, have certainly been produced by natural fires in dry vegetation and also by the couch-grass and rubbish fires lit on the fields as part of the ordinary farming process.

See:—

M. J. O'KELLY: Excavations in ancient Irish cooking places. *Journal of the Royal Society of Ireland*, lxxxiv, 1954, 105-55.

R. U. SAYCE: Canoes, coffins, and cooking troughs. *P.S.A.S.*, lxxix, 1946, 106-110.

Hill-forts and other major defended sites

In prehistoric Britain we are certainly dealing with a country filled with larger and smaller tribal groups and one in which it may be assumed that feuds, cattle-raiding, and seasonal warfare were endemic. The numerous ancient defended sites are part of the evidence for this and they are some of the most striking remains to be met with in the field.

It was formerly Ordnance Survey practice to call all prehistoric enclosed defensive works of stone or earth 'camps'. This was a legacy from an earlier time when the function of these works in ancient life was even less fully understood than now. The term 'Hill-fort' or 'fort' is a better description for the great majority of them, and is now being adopted except where there is a traditional name such as Uffington Castle, Tregeat Rounds, Caplar Camp, or Tynron Doon (to give four widely separated examples) when this will be applied. Most of the important sites and many minor ones do have proper names.

While most of these sites give little sign of permanent occupation there are some which contain numerous huts and have had a fair-sized settled population. Two southern examples are Maiden Castle and Hod Hill in Dorset; another is Tre'r Ceiri in North Wales, and a good Scottish example is Traprain Law. For the moment we will not concern ourselves with questions of absolute date, but will regard all these as native sites with an Iron Age cultural background. The examples quoted all have proper names, but if they did not they would still be described as hill-forts.

Most defended sites are placed on high ground and have complete circuits of single or multiple defences, but there are important examples where little natural advantage of position appears today. Some of the latter may yet be shown to belong to the Dark Ages. This apparent natural weakness may sometimes be explained by the former existence of ponds and marshes, now drained, or by dense forest which has been removed. Along the coasts and in

the more mountainous parts of the country it is common to find sites which place partial reliance on natural obstacles for their security. Some of the most striking examples of this will be found among the so-called 'cliff castles' of Cornwall where multiple defences placed across the only point of access to a promontory girt with sea cliffs complete a very strong position.

There are others which are difficult to classify either by plan or by position. Such are the defended site on the bank of Oak Mere in Cheshire, the water-defended Berth at Baschurch in Shropshire, and the curious site at Stonea near March in the Fens of Cambridgeshire. But when all exceptions have been considered the great majority is found on high ground and conforms to a scheme of single or multiple defences running more or less round hill contours and sometimes incorporating natural cliffs and crags.

Defended sites of the hill-fort type nearly all belong to the Iron Age and date between about 300 B.C. and the Roman conquest which, as far as England and Wales are concerned, effectively slighted them all, though it did not make some of them incapable of some re-use in the late 4th and 5th centuries. In Scotland the local system of forts must have suffered severely at the hands of Roman invaders, but it revived and carried on with various modifications far into the Dark Ages.

No one has yet been able to produce clear evidence of any defended sites earlier in date than the Iron Age. The Neolithic causewayed camps are very doubtful as defences, and the only Bronze Age sites which may be defensive have been claimed for the North Riding of Yorkshire, Eston Nab overlooking the estuary of the Tees and Boltby Scar, a striking promontory fort in the Hambleton Hills to the east of the Vale of York, are cases in point, but the evidence is slight. The frequent cross-ridge dykes which are found on the spurs of high land on both sides of the Esk valley inland from Whitby have a stronger claim to be Late Bronze Age, though their claim must depend on the real age of the settlements which they are clearly designed to defend. This has not been properly established, but the little evidence that exists is consistent with a Late Bronze Age culture, whatever that may mean in absolute date in this isolated region.

The distribution of Iron Age defended sites, chiefly hill-forts, is very general over most parts of Great Britain where there has been enough population to construct and support them. The Wessex area of England and the whole range of the Welsh Marches contain the largest number of major sites and in some areas, notably Wiltshire and the South Downs, it is possible to see an orderly arrangement in their partition of the country into spheres of influence. They are almost completely absent, however, in that part of the country north of the East Anglian Heights and east of the foothills of the Pennines. Norfolk and Suffolk contain very little, and the same is true of much of Cambridgeshire, Huntingdonshire, Nottinghamshire, and Lincolnshire. North of the Humber the North and East Ridings of Yorkshire seemed to be quite empty of defended Iron Age sites, though not of Iron Age population, but a small but important example has recently been found at Grimthorpe on the western escarpment of the Yorkshire Wolds.

There are many variations in plan and methods of construction. Broadly speaking where a fort is not of the promontory type depending largely on natural defences like the Cornish cliff-castles the plan will be either univallate or multivallate i.e. the fort will have either one line of defence only or several which are more or less concentric. They can enclose areas ranging from 100 acres and more to less than one acre.

As they are met with in the field today the great majority outside the stone countries have smooth, grass-covered defensive banks fronted by more or less filled-up ditches whether they have one or more lines of defence. The intrenched entrance is the commonest form, but there are more elaborate types covered

by complicated outworks as at Maiden Castle, Dorset. Only excavation can establish the real details of the defences, whether the ramparts have been timber-laced, if wood or stone has been used to revet the front of the ramparts, how the entrance gates and the timber towers defending them have been placed, what the section of the ditch in its original condition was really like, the arrangement of berms and counterscarps, whether the ditches have been re-cut at any time or the banks raised in height, etc. etc. The subject is one of great complexity and we do not have to enter into it here. Time has smoothed away or masked most of these details, and only the plan of the last stage of the site is self-evident. It is the same in the stone countries where various forms of stone wall and rock-cut ditch formed the defences. The main barrier may be a stone wall fronting a bank or it may be a thick dry stone wall up to fifteen feet in height containing very heavy material, but all will usually be in ruin with the surviving stretches of wall buried by great tumbles of stone fallen from their upper parts and the ditches, where there were any, likewise encumbered. Occasionally, as at Tre'r Ceiri in North Wales, the wall may survive to a height which preserves the rampart walk behind its crest, but this is exceptional. The same is true in Scotland, though here the fact that so many of the stone-built forts have been destroyed by fire partially preserves their ruined defences because they have been fused into solid masses. Some of the most famous ancient forts in Scotland scarcely survive at all today because they have been built round the summits of steep crags and, once the walls have fallen into ruin, the wreckage has slid down and mingled with the scree at the bottom of the slope.

In the South-west and Wales there is a type of defended site which occurs on hill slopes and does not seize the most obviously defensible positions. These have several concentric ramparts widely spaced from each other instead of being close-set as in a normal hill-fort. There are also associated enclosures, and while the sites are defensible, they may perhaps be better described as defended cattle pounds than as hill forts. Good examples occur in North and South Devon at Clovelly Dykes and Milber Down, and in South Wales two may be seen on Margam Mountain in Glamorgan, Y Bwlwarcaw and Tonmawr.

Certain rectangular sites of small dimensions seem to belong to the transitional phase between the Late Bronze Age and the Iron Age in Southern England. Two have been thoroughly excavated by General Pitt-Rivers at Martin Down and South Lodge Camp, both in the Cranborne Chase area of Dorset. The suggestion is that they were pastoral enclosures; certainly their object was not permanent habitation and they have no defensive strength. The pastoral explanation may be supported by the fact that the entrance is usually in a corner, an unlikely position in a defensive work. They are not difficult to distinguish from Roman military camps with which, however, they have been confused in the past.

Excavations in various parts of Southern Britain have shown that a number of hill-forts were never completed or were slighted almost at once, while others, like a group near Royston in Hertfordshire (Limlow Hill and Hoy's Farm), do not seem to have got beyond the stage of preliminary marking-out trenches. Some of these facts can be deduced from air-photography and others have been proved by excavation. The best example of an unfinished hill-fort in the South is Ladle Hill on the Hampshire Downs near Newbury where the ditch has been partly dug round the whole perimeter but the material from it lies about in dumps which have never been organised into a continuous bank for defence. All this is obvious enough on the ground, but is brought out with still greater force on the air-photograph.

In Scotland there are several unfinished hill-forts in the North-east. Some like Kinpurney Hill in Angus and Durn Hill in Banffshire are on entirely new

sites, while at the Hill of Dunnideer in Aberdeen and at the White Caterthun in Angus the surviving traces suggest that an abortive attempt was being made to add defence in depth to already existing forts. Here as in the South the evidence consists of marker ditches and obviously uncompleted structural work.

Even when a hill-fort has been completed and had an effective life it is sometimes possible to see that various minor schemes for adding to the defences have been begun but never finished. There is good reason to believe that work of this kind at Hod Hill in Dorset was due to the emergency of the Roman advance and the same was probably true of the Scottish examples mentioned above which may have been vain preparations to resist Agricola. Features of this kind should be looked-for in examining hill-forts. Their object is often to secure dangerous ground giving advantage to an attacker and they may be slight because the crisis developed too quickly for much work to be done.

In Scotland generally and also less commonly at southern sites like Ffridd Faldwyn in Montgomeryshire internal bracing with timber beams was used to increase the cohesion of dry-stone wall constructions. This work must not be confused with the special type of timber reinforcement (*murus gallicus*) which it resembles and which is reported by Cæsar as frequent among the Gaulish forts which he assaulted. In this the timbers were held together by large iron cramps and were so disposed in the rampart as to give increased cohesion against battering rams as well as having their forward ends protected so that they could not easily be set on fire. The true Gaulish type of construction has only been recognised once in Britain at Burghead in Nairnshire and even this example has peculiar features. Not only were the walls of these forts braced with timber, but there is good reason to believe that considerable timber buildings stood against the rear of the walls in many places. Here was a grave weakness, for once a strong fire gets a hold in such a site the high winds frequent in exposed situations can work up an intense conflagration which drives through all the timber bracing and partially fuses the stone of the wall, bringing the whole down in ruin. It may not be easy to credit this, but it has been shown by a modern full-scale experiment that a timber-braced wall of the Scottish type will vitrify when fired in a high wind. The large number of vitrified forts in Scotland and the few in Wales and elsewhere may be the result of deliberate slighting by the Romans, but the same end could easily be achieved by local enemies or mere accident.

The hill-forts of Scotland have been re-considered a good deal in the past thirty years. Their range in prehistoric time seems to be very similar to that of the forts south of the Border, and the earliest form of defended site is probably the palisaded enclosure of the Lowlands which may have begun as early as 400 B.C. (See Palisaded enclosures, pp. 61 & 77). The larger and more strongly sited of these were often later transformed into uni- or multi-vallate hill-forts with banks and ditches. Outside the Lowlands the major hill-forts of Scotland at the time of the Agricolan invasion were mainly stone-built and timber-laced with the result that many of them only survive in vitrified form owing to destruction by fire. It is impossible to say how many had this form of construction for, short of excavation, vitrification provides the only certain proof.

In the South hill-forts undergo a relatively limited development from uni- to multi-vallate forms and any further change was halted abruptly by the Roman conquest. Although there is evidence of some local re-use of the old sites in the fifth and sixth centuries A.D. this seldom involves any readily recognisable structural changes. In Scotland, on the other hand, a favourable site may carry more than one fort of different designs which show continuous use over a long period and possibly well into the Dark Ages. The Romans certainly must have destroyed many during their several drives into the country north of the

Forth and Clyde line, but sites seem to have been re-occupied and new forts built. A few like Traprain Law, Eildon Hill North, Walls Hill in Renfrewshire, and Norman's Law in Fife as probable major tribal centres show signs of progressive enlargements and many hut sites. Other forts like Dunadd, Dundurn, Dunbarton, Duneidin (Edinburgh) and Urbs Giudi (Stirling) which became famous in early historic times can hardly have failed to originate in late prehistoric times, but either the sheer precipitousness of the crags on which they stood or the re-use of the site in later times have combined to abolish most traces of any early work. We have historic record that they carried some sort of fortification in the days of the early Scots, the Picts, and the Britons of Strathclyde, but we have no precise knowledge of the qualities of these late defences. Owing to the great natural strength of many of them these must have taken the form of blocking the only points of access by strongly defended entrances and placing walls along the crests of the cliffs.

Where it is possible to examine the remains of successive forts on the same site as at Turin Hill in Angus or Dunearn in Fife the innermost work on the summit is a round or oval ringwork with a thick stone wall like a shell keep. These are quite small with any axis seldom much exceeding 100 feet and for a while they were interpreted as being the citadel of the larger work outside, but careful examination of the ground suggests that they succeeded the larger, presumably Iron Age, fort which was allowed to fall into ruin. Judging from present conditions on some of these sites it would appear that the collapsed stone walls of the older work which make an ankle-breaking chaos in front of them may have contributed to their defence. If we may associate the earlier and larger forts with the tribes known to Ptolemy and the Romans can we make the Picts of the sixth to the eighth centuries A.D. the authors of the ring works? There is no present answer to this. While they are certainly the latest features on the sites only excavation reasonably fruitful in finds can give us what we require.

Hill-forts are usually obvious features of the present landscape and are difficult to obliterate, but a certain number of them have been completely levelled and can only be identified from air-photographs. An example of this is Woodbury, a former large and strong single bank and ditch example a little west of the famous Little Woodbury Iron Age farmstead site south of Salisbury. Only a very sharp eye would detect any trace of this on the ground today, but the ditch has been proved by excavation to be fourteen feet deep. But more visible kinds than this remain to be found, often masked by old woodland and scrub, though the number must now be much diminished outside the Highland Zone. Place names with the 'bury' element can be clues to destroyed defensive earthworks.

It is always worth while to check the details of the earthwork of hill-forts as shown on large-scale Ordnance Survey maps against the facts on the ground. The faults of the 19th century surveys are being steadily corrected, but the reporting of any errors will be welcome. Hill-forts sometimes have secondary features like exterior annexes which have not been noticed and the details of entrances are important. It is also sometimes possible to detect ancient alterations of plan on the ground, though these will usually be best appreciated from the air. An example of this will be seen at Maiden Castle, Dorset. A common fault of the old plans was the failure to notice outer lines of defence which have been reduced or largely obliterated to increase the area of fields abutting on the site. Ploughing has completed the process so that some forts which once had two or even three ramparts and ditches are now represented by only one, the innermost.

Both in North and South Britain the excellent defensive sites presented by hill-forts even in their decay have led to their re-use in later times. A dramatic example is the early medieval castle mound which has been placed in the

commanding British Camp site on the Malvern Hills. Another is at Castle Hill, Almondbury, near Huddersfield. The site most fully utilised in this way is that of Old Sarum north of Salisbury where a Norman castle and cathedral and a considerable part of an early medieval town have been placed within the strengthened circuit of an Iron Age fort. In Scotland the castles at Edinburgh, Stirling, and Dunbarton certainly took advantage of the site of Iron Age forts and there are coastal examples which stand inside older earthworks.

See:—

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Lesser Iron Age defensive works in Scotland

We must now turn to Scotland to deal with a large class of specialised defensive structures which has no counterpart south of the Border. All these belong to the Iron Age, and it must be remembered that while the Iron Age in the South has a formal, and indeed, a practical end with the Roman conquest, in Scotland, as in other North European countries little affected directly by the Romans, it carries on until it merges with the Migration and Early Medieval phase after the 5th century A.D.

We have already seen that Scotland was well supplied with hill forts when Agricola led the Roman army north in A.D. 81. As with those of the South, they are to a large extent an expression of the general turmoil in North-West Europe which coincided with Roman expansion into Gaul and Germany. Warlike aristocracies and whole peoples were on the move and a tribal society was established in Scotland which was to last until its final representatives went down at Culloden in 1746.

The hill forts were accompanied by a rash of lesser strongholds which the late Professor Gordon Childe described as 'castles', for they were never any larger than the strongholds of the Middle Ages and played the same part in local life. They range through a whole gamut of small forts, duns, galleried duns, and stack-forts to the brochs which are the most specialised defensive works of the North and West. We will deal with these in turn.

These spread widely over the Orkneys, Shetlands, Caithness, Sutherland, Ross, and some of the western islands like the Outer Hebrides, Skye, Mull, and Tiree. There are nearly 500 known examples and they mass in the northern islands and on the mainland opposite. As there is good reason for believing that they began in Orkney all the occurrences far from this area may be regarded as colonies, often sited with the control of the western seaways in mind. Their distribution is largely complementary to that of the hill forts. There is much that is native and anciently rooted in the brochs, and as they are not manifestly older than the hill forts it is probable that they were called into existence to defend the dwellers in the North and West against the aggressions of the hill fort people.

In its outer appearance the broch was not unlike the modern power-house condenser . . . a tall cylindrical structure with a marked outward sweep of its profile towards the base. Its overall diameter was 50 or 60 feet and its wall was from 12 to 20 feet thick at the base. The average height of a broch was about 40 feet. The whole construction was a masterpiece of dry-stone building, and the presence of unlimited quantities of an ideally suitable slabby stone in the Northern Islands and Caithness suggests that this technique had its first flowering there. It was in any case deeply rooted among the natives from the Neolithic period onwards, and the broch can probably be regarded as the outcome of developing and improving the defence of the older type of courtyard house of the area. In the West, where building material was less tractable, there are some necessary adjustments of design, but all brochs are substantially the same. It is impossible that the fully developed broch can have sprung into existence without an experimental phase, and a task of field archæology in the North will be to try to demonstrate the stages by which this result was reached. Many sites exist, but much excavation will be required.

But to return to the details of the broch. While the outer surface of the wall had a marked inward batter through most of its height from the base, the inner face was practically vertical except for a scarcement for roof timber and the inner court, usually some 30 feet in diameter, was dark and well-like. Externally the face of the broch was featureless except for a small tunnel-like entrance at ground level strongly defended by guardhouses contrived in the thickness of the wall, with sockets for heavy bars, and a massive door. Besides galleries in the thickness of the wall reached by internal staircases there was timber-built accommodation inside up at least to first-floor level and there was often a well or cistern. The whole is an extreme form of passive defence, and when the local group had taken refuge inside it little could be done by an attacker but ravage the settlement outside. It must have been his hope to make a surprise attack, for a few days of baffled delay outside the stronghold would probably bring relief from other brochs.

In the Northern Islands and Caithness the brochs are often the obvious nuclei of settlements, but in the West this is not always so plain, though it may be taken for granted that the presence of a broch anywhere is symptomatic of the existence of some cultivable land not far away.

The subject of brochs and their place in the archæology of Scotland has been much argued and now the completion of two major excavations at the brochs of Jarlshof and Clickhimin in Shetland by Mr. J. R. C. Hamilton, O.B.E., have made some things tolerably certain which were obscure before. From Neolithic times to near the beginning of our era everything in the archæology of the North suggests a relatively peaceful life. The broch of Clickhimin sited on a small island in a loch near Lerwick has given a clear picture of the vicissitudes of a small settlement between the close of the Bronze Age and the Christian period. Beginning as a stone-built courtyard farmstead with a surrounding yard wall it was then fortified by a strong ring wall with a parapet following

the edge of the small island. The entrance to this was commanded on the inside by a strong and lofty block-house which overtopped attackers and also provided housing for the local chief. Other shelter was afforded by partly-timbered penthouses which ran round the inside of the perimeter wall and could be entered from the wall at first-floor level. A rise in the level of water in the loch made a revision of the defences necessary, and it was at this stage that broch-builders took over the site and erected a broch in the middle of the site in the best style. The pottery evidence from the site suggests that while the rank and file at Clickhimin were aboriginal natives long settled in the area, both the builders of the ring wall and of the broch belonged to an intrusive group which imposed its will and carried out these major works.

Since the brochs as a whole do not seem to have had a life of more than two hundred years from about 100 B.C. down to the beginning of the second century of the Christian era it has been suggested that, as brochs became necessary as defence against hill-fort people, so the irruption of the Romans into Scotland defeated the latter and brought about a new situation. Although the first Roman invasion was not of long duration the whole attention of the mainland folk further south was now directed to preserving their own independence and, where opportunity served, to raiding the rich prizes offered by Roman Britain. Thus the need for brochs ended and did not recur. The rather unexpected presence of a few brochs covering strategic points in the Lowlands could be the result of an alliance between broch-builders and hill-fort people against a common enemy. At all events the life of Lowland brochs like Torwoodlee and Edin's Hall was very short and entirely concentrated in the time after the first Roman withdrawal.

The Clickhimin broch did not have a very long life and in its decay its courtyard was occupied by a large wheel-house. This structure, with its successors and various outbuildings, completed the history of the site which was finally abandoned shortly before the coming of the Norsemen to Shetland in the 9th century.

Today many broch sites are scarcely recognisable from the remains of the broch alone. Sometimes they have been almost entirely removed as in the arable lands of Caithness, and more often the site is reduced to a large stone heap which, at first sight, could equally well be the remains of a large ruined cairn. Where the site was once a broch the centre of the stone pile often tends to be concave, reflecting the hollow character of the original structure. Careful examination of the site of a true broch will usually show signs that a few of the lower courses of the tower are still in position, and it may be possible to detect some details of the entrance. In the North-west and West these lower courses are often made of very large stones liable to remain in position when the superstructure has collapsed. Brochs are often sited on promontories along the coast; the necks of these are defended by single or multiple walls and ditches like the cliff castles of Cornwall. A natural harbour is often close by. There can also be many associated domestic buildings outside, though only excavation can show how they relate to the broch in time. Many may be much older, and a site like Jarlshof in Shetland had a history which shows successively an open Bronze Age settlement, an Iron Age phase culminating in a broch, a Dark Age open site, a Norse settlement, and an early modern fortified house . . . a continuous life of more than two thousand years. Each phase made more or less use of the materials of its ruined predecessors, and when a site has reached this degree of complexity only a long and difficult excavation can reveal the sequence of events.

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Duns

The Gaelic word 'dun' means simply 'fortress' and when compounded in proper names it may be applied to the whole range of ancient fortifications in Scotland, from small brochs to large hill-forts; it is also sometimes applied to purely natural features which resemble fortifications, though such cases are always worth close examination in the field in case there has been some attempt to strengthen them artificially. Amongst archaeologists, however, it is usually given a more limited meaning and is employed to describe a class of drystone defensive structure common in western and northern Scotland.

In their typical form duns are circular, oval, or occasionally D-shaped, and small in size, seldom exceeding 60 feet in internal diameter; Dun Borgadail, in Kintyre, one of the best preserved examples, measures 42 feet from wall to wall, while Ardifuar, in mid-Argyll, is abnormally large at 65 feet. Though they frequently take advantage of positions of natural strength (here again Ardifuar is an exception), duns are distinguished from the general run of small forts by the fact that they follow a deliberate plan and are planted on their site with a minimum of adjustment, rather than accommodating themselves to it. In this they resemble brochs, and the resemblance is sometimes carried further by other features . . . a wall that is thick in relation to the overall size (12 feet is not uncommon), entrances with door-checks, bar holes and guard chambers, and a scarcement on the internal wall-face to accommodate the timbers of buildings. The sub-class of 'galleried duns' go even further and have double walls of broch-like construction, spanned at intervals by large slabs to bind them together, perhaps a translation into incombustible stone of the timber bracing used in forts. It follows that when a structure is badly ruined it is sometimes impossible to decide without excavation whether it should best be classified as a broch or a dun. The chief point to bear in mind is that a broch was a tower while a dun was not. Thus if the pile of stones has not been too much robbed by later builders, the quantity of fallen material in relation to the diameter may be suggestive. Again, the height of a broch demanded a broad-base, and the overall width of the wall should be determined where possible; a wall as thin as 12 feet is probably only possible for broch-building where the peculiarly suitable stone of Caithness and the Northern Islands is used . . . in Strathnaver (Sutherland), by contrast, the standard width seems to have been between 14 feet 6 inches and 15 feet. If galleries are visible their precise nature should be noted, while stairs within the thickness of the wall will put the broch-character beyond doubt. Duns sometimes had steps up to their parapet walk, but they were built against the inner face, open to the interior of the dun. Amateurs need not despair in face of these complications. Different writers on this subject have used different definitions and the terms 'semi-broch' and 'broch-like structure' have been employed. The important thing is to look for features like wall-faces, entrances, chambers and stairs, and to take accurate measurements.

Like brochs, duns sometimes have outer defences of earth and stone, while in several cases they have been planted in pre-existing forts. Such a succession is obviously important for the dating of the two phases and the field worker should always be on the look-out for it. Eccentricity of plan is the commonest indication, but there are cases where the dun actually stands on the ruins of the earlier structure.

The same technique of wall-building as is employed in the galleried duns is sometimes used in western Scotland for a rampart built across the neck of a promontory. This produces a typical promontory fort, but such works form a distinct class and must surely have been built by the same people as built the galleried duns.

All these structures belong to the Iron Age in Scotland and when some have been excavated signs of squatting in their ruins by Dark Age folk have been found.

Stack forts

These are also a common feature on the west coast and in the western islands. They are constructed by taking some striking stack of rock and converting it into a strong point. In contrast to the duns stack forts make all possible use of natural features, merely supplementing them with defensive walling where necessary. While they may properly be mentioned here their age is quite uncertain and traditions in the islands suggest their use in medieval times. This need not, of course, mean that they were built then, and with both duns and stack forts it is common to see rectangular houses inserted in them as a secondary feature.

Small Lowland forts

The country between the Forth-Clyde isthmus and the line of Hadrian's Wall contains a great many small forts defended by one or more banks and ditches and tending to stand on the upper slopes and spurs of hills rather than on the summits. Their largest concentrations are round the head waters of the Lowland Rivers and they often contain groups of round huts. They are round or oval in plan and the majority does not greatly exceed 100 feet in overall width. Recent work as at Hownam Rings on the north-west slopes of the Cheviots has shown that the first phase of these sites was sometimes a single timber palisade defence, and the evidence of its emplacement can sometimes still be seen on the ground with surprising clarity in the form of a slight continuous depression. But the later strengthening of the defences by a single or double line of bank and ditch can obliterate this primary feature. Sometimes these banks were revetted by stone and sometimes by timber.

In general it appears that these small forts belong to the Roman period. Even though they are numerous they cannot have been a serious menace to a determined Roman military effort, and it may be that for most of the time they were in relatively friendly occupation. A general consideration of them will be found in the Roxburgh volume of the Scottish Commission on Ancient and Historic Monuments.

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INDUSTRY IN PREHISTORIC TIMES

Flint mines, stone quarries, and axe factories

Mining and the trading of its products have a very long history. Before the use of metals began, and for some time during its early stages, men were digging for flint and stone to get superior material for making tools and weapons. Flint was preferred for most purposes when it was available, but there was early use of other kinds of stone capable of being flaked and ground into shape.

Flint can occur as gravel or in erratic blocks carried by ice and water action far from its parent chalk country, but in this form it is often inconvenient in size and intractable in quality for making tools. The discovery of outcrop flint in beds and of its superior working qualities led by a natural process in Neolithic and Bronze Age times to the sinking of shafts to follow the flint underground when the outcrops were worked out. Galleries were driven out in all directions from the bottom of the shaft in the most developed form of mine, though much of the working was less elaborate depending on local circumstances.

Since the early recognition of large groups of filled-in shafts at Grimes Graves in Norfolk and Cissbury in Sussex many more have been found, principally at other places in the South Downs and near Salisbury. Apart from the evidence of the filled-in shafts grouped close together along with the dumps of material thrown out in getting down to the flint beds . . . all well weathered down and often covered by long-established turf . . . a further clue to flint-mining is the scatter of waste trimming flakes. The miners did not take away the large nodules just as found, but trimmed off all useless projections and crust to lighten them for transport; hence the tell-tale rubbish.

There are also a limited number of places where rock occurs capable of being flaked for the making of axes, and much prospecting must have gone to their discovery. This rock is broken off from outcrops and the surrounding litter at these sites is much like that found at the flint mines. There are many struck flakes and broken rough-outs of axes which have been discarded. The most famous of these sites in Britain and the first to be recognised is at Graig Llwyd on Penmaenmawr Mountain in North Wales. Another is at Pike of Stickle in the Lake District. The distribution of axes made from these and other stones, some from as far off as Northern Ireland, was widespread, and has been traced by taking thin slices from axes and examining them microscopically to make a positive identification of their material which cannot be certainly recognised at sight. There is no space to mention all the sources here, and some remain to be identified, but nothing has thrown more light on primitive trade than the movement of this axe material to places remote from its sources.

While the discovery of new sources of axe material will require special technical equipment no progress can be made without the production of accurately-sited axes for examination. Field workers will therefore recognise the importance of noting the find spots of axes, in whatever condition they may be, and they must be prepared to submit them to the expert. The slicing process has little effect on the axe, whose surface can be skilfully restored. If sliced it will have told its story and helped to build up the distribution map of its particular material.

Gold

This metal can be found in free form and has always been highly prized. It was an important commodity in Bronze Age times, and the trading of it between Ireland, its principal source in the British Isles, and the Continent is thought to have been active in this period, contributing much to the brilliance

of the Wessex culture centred on Wiltshire which completed the construction of Stonehenge. Although Wales contains a lot of low-grade auriferous rock there is no evidence that this was worked before Roman times. The Irish gold was washed in free form from the beds of streams, and some may have been obtained in the same way in Wales and the South-west of England. In historic times gold has been found in worth-while quantity in the Strath of Kildonan, Angus, and the Lead Hills, but although alluvial working may be assumed, there is no direct archaeological evidence for extraction on any British sites in prehistoric times.

Tin

Tin also occurs in alluvial form, and here there is no doubt that it was found by streaming in Cornwall and on Dartmoor. There is ancient testimony to the importance of Britain as a source of tin which was necessary as a constituent of bronze. The tin-producing areas of the South-west have been worked very heavily from early times to the present day by various processes, and it will only be by chance that any certain evidence of the prehistoric search for it will be found.

Copper

The most important sources of this metal in Britain have been at Parys Mountain in Anglesey and Halkin Mountain in Flintshire. Large scale working here in more modern times has completely changed the original character of the sites and any traces of early mining that there may have been have certainly been swept away. Copper lodes, though otherwise poor and infrequent in Britain, were probably quite adequate for prehistoric needs and were worked out at the time. Scotland has little to show with a few occurrences in Galloway, Islay, Rousay, and in the Crinan district of Argyre. There is nothing in Britain to compare with the numerous traces of prehistoric mining in Central Europe. There is a type of heavy perforated stone hammer considered to be a miner's tool which occurs from time to time, and any examples should be carefully noted in case their find spots give clues to ancient workings.

Lead

Metallic lead has been found in both Bronze and Iron Age contexts. Lead 'patterns' of implements belonging to the Late Bronze Age and normally cast in bronze are known, though they are rare, and lead objects like net-sinkers have been found in the Iron Age lake villages of Somerset. There is no more evidence for prehistoric lead mining in Britain than this, though ores occur in many places and have been heavily worked in Roman and historic times. The Mendip lead-producing areas are close to the lake villages, which is suggestive, but they have been much worked till recently to the certain detriment of any traces of prehistoric mining.

Iron

For many practical purposes iron is not an obviously superior metal to bronze, but it ousted the older metal as a material for tools and weapons because it was cheaper, and the ores and fuel required for its manufacture were available in many places. Iron was certainly made in considerable quantities in the last centuries before the Roman invasion, but there is little archaeological evidence of the places of its manufacture.

While workable ores occur in many places the chief sources used in early days were in the Weald of Kent and Sussex, the Forest of Dean, and various places in the Midlands and North. It was here also that the Romans and later peoples followed up with a large industry of their own which appears to have swallowed up most traces of prehistoric work. But as iron working could be carried on in a small way in many places unlikely to be disturbed by later developments sites should be available for study. On many Iron Age sites the

presence of slag and ash suggests an almost domestic addiction to small-scale smelting, but this has never been properly studied. An example is the bloomery which, judging by the concentration of slag, seems to have been part of the Iron Age hill fort of Solsbury near Bath. Traces of this work should be watched for. They will consist mainly of round and flattish cakes of slag and much ash, but their more precise age will be determined by the accompanying pottery and other rubbish left behind by the ironworkers.

Salt

The importance of salt needs no stressing. It has always been in great demand both as a condiment and for preserving food.

Britain is not so rich in inland sources of salt as Central Europe, but it is surrounded by the sea, and there is much evidence of ancient salt-working dating from the Iron Age onwards. The best known early salt-making sites are found on the coast at Kimmeridge in Dorset, along the Essex shore of the Thames estuary (the Red Hills), and at various places in the Fenland and along the Lincolnshire coast (Ingoldmells Point). There was no apparent use of the brine springs which must have existed in the neighbourhood of Droitwich and in Cheshire.

The precise method of making salt from the sea varies over the world with climatic conditions, and it is evident that no reliance could be placed on natural evaporation in open salt-pans in Britain. The methods used in Britain are all basically concerned with boiling down salt-enriched water and casting the resulting salt into blocks of standard sizes and weights. A large variety of specialised clay receptacles and accessories were used, all of which were cheaply made and readily expendable. Thus the salters' working places are often marked by low but extensive mounds of earth reddened by fire (red hills). While they are chiefly made of soil they also contain many broken clay objects, chief among which in Britain is the 'handbrick', a rough column of fired clay squeezed up in the hand and flattened at both ends. These were used in great numbers to support clay troughs of different shapes over fires, and there are other objects like moulds for casting the salt into blocks and square-sectioned clay bars tapering towards the ends. The broken remains of all these, along with clay partitions for the troughs and various clay squeezes of different forms used as supports and spacing pieces add up, with much burnt earth and ash, to make a Red Hill. The date of any site will be determined by the associated pottery and other domestic rubbish left behind by the salt-makers, whose work seems to have been seasonal.

There are variations in the form of the typical supports and containers which derive from the kind of ground on which the industry was being carried on, but the unfailing symptoms of these sites will be the quantity of broken coarse clay objects of many kinds, sometimes glazed by having been fired in the presence of salt. Lincolnshire, Purbeck, and Essex all vary in the details of their mode of work, and the Red Hill type of accumulation is not a feature of prehistoric salt-making between the Wash and the Humber. There are also many post-Roman sites which have their own peculiarities to be mentioned below, and the associated domestic rubbish is the only reliable clue to age.

There have been changes in the coast line since early days, and some sites may now be found far from the modern range of the tides. Sites deep in the Fenland and others up the Valley of the Great Ouse may be explained in this way.

Quern quarries

The preparation of meal in the days before the mill worked by animal, wind or water power depended on the use of the hand mill known as a quern. In its most primitive form it was no more than a large slab of suitably abrasive stone on which a rider stone was worked up and down by hand to crush the

corn (saddle quern), but by the Iron Age the rotary type began to come in. A bee-hive-shaped upper stone with a central shaft hole revolved upon a pin set in a lower stone. The upper stone was turned by a handle set in the side and the grain was poured in to a hopper-like expansion of the top of the shaft hole, coming out as meal round the upper edge of the lower stone.

There is nothing known in Britain to compare with the age-long quarrying of the greyish-blue lava of Mayen in Germany which has provided a large part of Europe with mill stones, but a number of sources of quern material have been recognised. There are two in the South, the Pen Pits on the Wiltshire-Somerset border between Wincanton and Mere and Cole's Pits at Coxwell in Berkshire north of the Vale of White Horse. They consist of a large number of more or less cylindrical shafts of no great depth cut into the greensand rock and they produced querns of poor quality. More recently a better source of good quality querns has been recognised at Wharnccliffe near Sheffield. Here the evidence is provided by more or less finished beehive querns scattered about near an obvious source of millstone grit. There must be more quern quarries than these in Britain and, as in the case of stone axes, the origin of querns should be a subject for a petrological examination of all known specimens.

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ANTIQUITIES BELONGING TO THE PERIOD OF THE ROMAN OCCUPATION (A.D. 43-420)

General

The Roman occupation of Britain began in A.D. 43 and continued for some four centuries, but it did not affect all parts of the country equally. Native life went on much as before, not only in Northern Scotland, where the Romans never penetrated, but also in some parts of the Roman province itself, especially in Wales and Cornwall. Accordingly in distinguishing the antiquities of this period it is not possible to classify them strictly by date and the use on the maps of Gill Sans type is restricted to specifically Roman structures . . . whether military, such as forts and camps, or civil, such as temples, towns, and villas. Unromanised 'native' sites, most of which began life in the preceding Iron Age anyway, are still named in German Text

With the Roman conquest Britain was brought very largely under the sway of a people who had already imposed a standard system of law and administration and, to a large extent, of life, on the whole of the Mediterranean world. A great thrust into the barbarian north-west had brought all the lands west and south of the Rhine under the Roman sway, and its extension to the Baltic seemed probable. South-eastern Britain was no stranger to Roman influences in the century between Julius Caesar's reconnaissances in force and the formal conquest by Claudius. Between A.D. 43 and the end of the 1st century the main features of Roman civilisation were spread into all but the most remote parts of England and Wales and the old tribal life ended. In Scotland, on the other hand, the occupation was military. For a short while after Agricola's campaign against the Caledonians in A.D. 83 the Roman military outposts were carried far into the north-east, and probably on to the Moray Firth, but this great extension could not be maintained and the frontier was later stabilised temporarily along the Forth-Clyde line by the building of the Antonine Wall in A.D. 143. Many traces of military activity survive in the Lowlands of Scotland, but all serious attempts to hold territory in a direct way north of Hadrian's Wall ceased in the 3rd century.

In England also north of a line drawn from the Tees to the Mersey there is little Roman work that is not military. The country is mainly a frontier zone stabilised by Hadrian's Wall and controlled from a base at York. The road system extended up to the Wall and beyond, but north of York its prime purpose was to provide military communications.

Our knowledge of Roman Britain has increased greatly since Haverfield put the study of the province on a sound basis at the beginning of this century. In the case of major features like towns this is chiefly due to excavation, but in the countryside the growth of knowledge has been due to much field work supported of late by air-photography. The field antiquities of Roman Britain will be considered under the following heads:—

1. Buildings.
2. Military sites.
3. Towns.
4. Minor occupation sites and agriculture.
5. Roads.
6. Mines and industrial sites.
7. Roman burials.
8. Miscellaneous.

Buildings

In this section no consideration will be given to buildings which are part of towns.

The Romans were great builders. Their work has distinctive character both in style and materials, and is in little danger of being mistaken for work of another period. They used much native and imported stone but also, quite new to Britain, brick and tile of various kinds and concrete with and without rubble.

The site of a Roman building is usually obvious enough to the experienced observer if it is on ploughed soil. There should be a considerable scatter of stone rubble, broken roof tiles (which may be of stone as well as baked clay), box tiles, plain or painted plaster, tesserae from mosaic pavements, rusty nails, broken pottery, food refuse in the form of bones and shells, black soil, and possibly a few coins and other metal trifles. All or some of these occur in various combinations, depending on the part of the country in which the building stood, its purpose, and the details of its construction. It is certain that many Roman buildings were of half-timber construction on solid wall foundations, while others were of wood with or without tile roofs. In such cases the

amount of building rubble will be much less, but even where a building has been of most solid construction the robbery of its materials in later periods may have left little more than floors and wall-footings. A thorough search for materials may even have left no more than the so-called 'robber trenches', only to be recognised by excavation, in which walls once stood.

If a site has been under the plough for a long time the scatter of rubbish will have been dragged about by the work of farm implements over a much larger area than that actually covered by the building when standing. Sometimes the site of a large building will show little sign of its presence on plough soil, and this may be due to a greater depth of overlying soil which has crept down from neighbouring slopes or otherwise accumulated in an abnormal way, but the much deeper ploughing of recent years sometimes reaches down to them and produces the tell-tale scatter.

In grassland the chances of discovery are not so good. Moles and rabbits may throw out their contribution of evidence, and if the soil has never been ploughed it is possible that a bumpy surface may tell of buried foundations. Heavy growths of nettles may be a secondary clue, but such sites are usually best shown by air-photographs in dry weather when the local shallowness of the soil over buried foundations and floors causes parching. Sometimes the overlying soil is so deep and rich that only an exceptional drought will bring out this effect, and the normal spring dry period will not serve.

Pipe lines are being increasingly laid across country and these will sometimes strike across lost building sites. In any case it is always worth while to make tactful enquiries from farmers and ploughmen who will have an intimate knowledge of how their implements travel over their fields, and where they meet with resistance under the soil. In stone countries these obstacles may be only outcrops, but any such places should be examined.

Without an immense amount of excavation we cannot hope to know how frequently timber buildings occurred. If they chanced to have tiled roofs some scatter from these may be expected, but in many cases the only relics are likely to be the imperishable part of the domestic rubbish of the site like pottery. On chalk lands the surviving system of post-holes from these structures can give evidence of their size and character, but these can only be found by excavation. In other soils they may be difficult to recognise, but the domestic rubbish will still be there, and it is for this reason that the field worker should make a careful record of the occurrence.

The true character of a building can only be fully established by excavation, and the presence of mosaic floors will not be conclusive by itself that a building is a villa. Most buildings in country situations will be villas, but there is a considerable number of isolated bath-houses up and down the country, while rustic temples and shrines continue to be found. The bath-houses are probably connected with groups of timber buildings as yet undiscovered and it will be obvious that bath-houses must always be built of incombustible materials.

The temples range from big places with large precincts like those at Lydney in Gloucestershire and at Gosbeck's Farm near Colchester down to very modest sites indeed. Traces of buildings found on the top of a hill or in other bold situations are likely to be the remains of temples, but they may also be found on lower ground and they often take the place of older native shrines which can occur anywhere. Good examples of the two extremes are the hill-top temple at Chantonbury Ring on the South Downs near Worthing and the low-lying shrine at Noah's Ark near Frilford in Berkshire.

Not all scatters of Roman building material reveal the sites of buildings. The sites of kilns where bricks and tiles have been made are prolific in rubbish of this kind, but closer examination will show that this comes from dumps of spoiled wasters and not from a ruined building.

A number of villas have been found a long time ago, excavated, and covered up again. Occasionally no record of the position of the site exists beyond a parish indication, and the re-discovery and recording of these is valuable work and suitable for beginners as the field of enquiry has probably been narrowed by hints in the original report. It should be remembered that in Roman times people had good eyes for desirable building sites, and this should be a clue to likely places.

Military sites

All forms of Roman military engineering are distinguished by a close adherence to rule, and even in earthworks the constant elements of straight sides and rounded corners make it difficult to confuse them with any work either older or younger. In spite of this various antiquities have been described as 'Roman camps' in the past, and the Ordnance Survey has contributed its share of errors. Most of these have now been removed from the maps by revision, but it may be as well to list the various categories of Roman military works and explain the terms that are currently applied to them. They are:

1. Frontier defences, that is Hadrian's Wall, the Antonine Wall, and the Cleaven Dyke in Scotland. These are a specialised study and are not dealt with here.

2. Legionary fortresses. These were the permanent bases of the Roman legions, which they occupied when not actually out on campaign. They range in size from 50 to 60 acres, are oblong in plan, have four main gates, and are defended by a single wall with towers at the corners and the gates and at intervals between; the wall was backed by a rampart and fronted by a ditch. After the completion of the conquest the permanent bases of the legions in Britain were at York, Chester, and Caerleon, but earlier fortresses are known at Inchtuthil in Perthshire, Lincoln, and Gloucester. One certainly existed at Wroxeter and there are probably one or two more to be found in the south-east relating to the years immediately after the invasion.

3. Forts. These were the permanent bases of the auxiliary units, both infantry (*cohortes*) and cavalry (*alae*). Their size was dictated by the character and strength of the units they were designed to accommodate and normally ranges from $3\frac{1}{2}$ acres for a cohort 500 strong to 10 acres for an *ala* 1,000 strong, though they may be a little smaller or very much larger. In plan and construction they are similar to legionary fortresses, but some examples are rhomboidal, not oblong, in shape; they are not always equipped with a stone wall, and they may have several—even as many as eight—ramparts and ditches. They often have annexes attached which contained such buildings as bath-houses.

4. Fortlets. These occur not only on the two Walls but also along roads and were used as patrol posts, manned by detachments of less than cohort or *ala* strength. They are square or oblong in plan and defended by one or more banks and ditches, but they usually have only one entrance and are very small.

5. Signal stations. These range from simple stone platforms to circular or square enclosures which surrounded a timber tower, and in the latter case are sometimes indistinguishable from fortlets.

6. Camps. These include works constructed on campaign, temporary quarters used by troops while building permanent works, and staging camps in the vicinity of forts. They are defended by a single bank and ditch, usually of slight character (the bank carried a palisade). They normally have four or six entrances protected by traverses (*claviculae* and *tutuli*). They are not always absolutely regular in lay-out, but their sides run in straight lengths and their corners are always rounded. There is a vast range in size—the campaign camp at Raedykes, in Aberdeenshire, covers over 100 acres.

7. Practice works. These usually take the form of groups of small camps with an unduly high proportion of complicated features such as *claviculae*, obviously designed to give the troops practice in constructing such works.

8. Siegeworks. Remains of Roman siegeworks, consisting of camps equipped with artillery platforms and partial circumvallations, are known around the hill forts at Woden Law in Roxburghshire and Burnswark in Dumfriesshire, though in both cases they appear to have been constructed for training rather than in earnest.

9. Parade grounds. These were as necessary to the Roman as to any other army and were laid out near forts. They are only likely to be identifiable, however, in remote areas, especially where some artificial levelling of the ground has been necessary. An excellent example survives at Hardknott in Cumberland where both the parade ground and the tribunal can be seen.

10. Miscellaneous, such as the supply base at Richborough and the earliest Roman works at Colchester. Industrial works under military control, such as tileries, potteries, and ordnance factories, are referred to under industrial sites (see p. 94 below).

A division between the civil and military areas of Roman Britain developed quite early in the occupation, with the south and east becoming a fully organised province while any romanised civil life in the north and west remained dependent on the military establishment. But this does not mean that there are no military antiquities in the south. Leaving aside the late defences erected on the North Sea, Channel, and other coasts there are various sites belonging to the period of conquest many of which were early buried under developing Roman towns. Others continue to be found along the lines of the earlier Roman roads and at points in the south and west which were obviously connected with campaigns of conquest like those of Vespasian and Ostorius Scapula.

Examples of these are the military sites strung along Watling Street, notably at Stretton in Staffordshire, and the temporary forts at Hod Hill near Blandford, Waddon Hill near Bridport, and at Wiveliscombe in West Somerset. Some of these are obvious enough, others have been found by aerial photography, and at Waddon Hill the find was made by an intelligent consideration of some material from the site preserved in the museum at Bridport. Other sites like the early military phase at Great Chesterford in Essex and the original fort at London have been found by excavation. Works of more or less permanent character are also known to have existed at Richborough in Kent, Water Newton in Northamptonshire, Great Casterton in Rutland, Ixworth in Suffolk, Droitwich in Worcestershire, Metchley in Warwickshire, Broxtowe in Nottinghamshire, and Wroxeter in Shropshire. The Severn valley is yielding its quota of new sites and more certainly remain to be found in many places.

Since 1945 many new military sites have been found in North and South Wales, the Lowlands of Scotland, and on the eastern side of Scotland between the Forth and the Moray Firth. Almost all of this is due to air-photography. Meanwhile much light has been thrown on the defences of Hadrian's and the Antonine Wall and on the coastal defence system between the western end of Hadrian's Wall and St. Bee's Head on the Cumberland coast. Roman practice camps, formerly confined to Cawthorn in North Yorkshire and Castell Collen in Central Wales, have now been recognised in other places, and notably outside the military headquarters at York.

It may seem that there is not much for amateurs in all this since so much of the advance in our knowledge is due to air-photography or excavation, but many of the Welsh finds have been made by field work on the ground, and another success of this kind is the finding of a new Roman camp at Gordale

near Grassington in the Pennines. Admittedly it is most economic and rewarding to proceed by way of air-photography, especially where sites have been ploughed out, but a small type of military site worth looking for on the ground is the signal station. These must of necessity be sited in such a way as to be visible over long distances, and also to be intervisible as a system. This gives the field worker scope for skill in judging the possibilities of a countryside where, except for loss of land to the sea, there has been no significant change since Roman times. Many more of these sites must await discovery.

The search for other Roman military works is also helped by the fact that they formed part of a coherent and intelligible pattern. For the camps belonging to a campaign, which are unlikely to have been linked by made roads, we must still rely mainly on chance discoveries, but a glance at the map of Roman Britain will show whereabouts the missing forts must be looked for; this applies to those related to the initial military occupation of the south as well as to those in areas like Southern Scotland.

Finally a good knowledge of Roman military practice and of the typical small objects belonging to Roman soldiers' kit is required. Ability to recognise the latter can identify a site as military when practically all its defences have been destroyed.

Towns

The discovery of a new Roman town is hardly expected from the field worker today, though the recent increase in our knowledge of Caister on Sea near Great Yarmouth amounts to this.

The archaeology of most Roman towns in Britain is usually well under control, and no obvious chances to find out more about it are missed. But there is still much scope for the amateur among some of the less-known places. There are still Roman urban or quasi-urban sites about which we know little or nothing. Examples are the Roman site at Whitchurch in Shropshire and the little walled town of Horncastle in Lincolnshire. Even when no excavation takes place and no areas are cleared of modern housing it is still possible to make useful deductions from the condition of buildings standing over the suspected site of a Roman town. We know that it is quite exceptional for a Roman population centre of any size at all to be without defences in the form of a wall and ditch. Where the whole site has been razed and covered with later buildings the original area of the town can be shown by a regular change of level round its limits, and the presence of the foundations of a wall and a filled-up ditch can be deduced from a study of the way in which later buildings behave on their site. Those standing over buried wall foundations may be 'breaking their back' slightly in the course of years as they settle on to ground which is not uniformly hard all over, and the line of the buried wall may be suggested by the alignment of cracks on different sides of such a building. In the same way the line of a filled-up ditch may also appear. The normal town ditch is usually wide enough to accommodate an average house between its edges, and in such a case nothing may be seen, but where houses stand partly on the fill of a ditch and partly on the solid ground the same cracks and distortions may occur as with a buried wall foundation. If the system of cracks is plotted on a large-scale plan of the modern town . . . the 25 inch scale should be sufficient . . . a regular plan may appear which will show the arrangement of the buried features.

Minor occupation sites and agriculture

Evidence for the active daily life of a large and heavily Romanised rural population may be found thickly scattered over most parts of the civil area of Roman Britain. In practice it consists chiefly of scatters of broken pottery and the finding of coins, either singly or in hoards, as well as burials, mining sites, quarries, industrial sites, mean of communication by land and water

with their accessories, etc. which are being dealt with under their separate heads. In this section we are concerned with those making their livelihood by country pursuits.

Here, as always, agriculture and stock-breeding dominate the scene. In assessing the crop-raising capacity of Roman Britain we must not fall into the trap of thinking that, because we can now recognise many surviving traces of Romano-British farming on the chalk uplands of the south and in the Fenland, these areas were the most important at this time. The truth probably is that the chalk lands were almost as much marginal then as they were until about a generation ago, and that the granaries of Britain would have been lean if they had relied heavily on production from this source alone. The evidences of Romano-British agriculture survive in these areas precisely because the post-Roman populations worked the heavier and more productive lower lands, and relegated many of these uplands to sheep and cattle. This may be an over-simplification of what happened, but it is certain that some of this area was never extensively under the plough again till modern times, and the survival of so many traces of the older system is the best evidence for this.

It was otherwise in much of the Midlands and East Anglia where the soils, though more difficult to cultivate, give a much heavier yield. Here recent field work has shown a far greater density of population than was thought possible thirty years ago. If soil was of good farming quality the removal of a heavy cover of trees and scrub need not have been a serious obstacle to people with the technical equipment of the Romano-Britons. There is evidence that they were not the first in the field as farmers of the heavier lands, but they must have carried out the first really widespread clearance. They possessed iron axes, saws, wedges, mallets, levers, and fire before which all trees likely to be found in Britain must yield, and there was no addition to this capacity to clear ground until the appearance of gunpowder in the 14th century. No obvious traces of their agriculture have survived because their successors, the Anglo-Saxons, took over these more productive heavy lands, and nearly fifteen hundred years of cultivation on a different field pattern have removed them completely. Here and there, as in the coastal plain south of Chichester in West Sussex, some signs of the earlier agriculture still persist to be seen from the air, but normally they are only recognised by excavation in the form of slight ditches which are not always capable of showing up on air-photographs. To find other surviving surface traces off the chalk we have to go to the lower slopes of Dartmoor, to Cornwall, certain areas in the Welsh marches, or to some of the more favoured limestone areas in the Pennines. It is in these Highland zone areas that much field work remains to be done, notably in Craven in North-west Yorkshire where remarkable systems of fields survive in Upper Wharfedale, and where there are large areas of clint . . . rough limestone surfaces swept clear of soil . . . which have been reduced to this condition through ancient cultivation breaking up the vegetational cover which held the soil in place, causing it to be swept away in time by wind and rain. Some of these clint areas are still surrounded by dry stone walls.

This work does not give scope for considering all the known features of agriculture in Roman Britain, but some of the more important questions relating to it on the topographical side can be stated briefly. Prominent among these is the colonisation of the Fenland in the late 1st century, and the continuance there of much activity until worsening drainage conditions ruined all but the natural island areas in the late 3rd and 4th centuries. Here, while much can be seen on the ground because most of the features are distinguished by differences in soil coloration, the only economical way to study the area as a whole is from air-photographs, so large and complex is the local situation.

effective limits of the Province. Paradoxically this may be most apparent after the Province had collapsed and Christianity had spread into the Celtic world of the West and North.

Most work in this field will be in Scotland. Finds of objects deriving from Roman Britain occur sporadically in otherwise completely native sites in Scotland right out into the Northern and Western islands, but they are not numerous and can only be the result of loot and a slow seepage from further south. Exceptionally there are hints of a possible trading connection between the Roman world and the extreme north by sea. All finds of Roman material in these remote places require careful record, but there is little chance of the present picture being much altered by them.

Roman roads

These may be divided into two classes, major and minor.

Major roads

The search for Roman roads has now been carried on actively for at least two hundred years, and it shows no signs of ending through any exhaustion of the subject matter.

No Roman road is published as such on Ordnance Survey maps until its authenticity has been proved beyond doubt. This is present practice, but it was not so in the earlier days of the Survey and many old mistakes have been corrected in the past fifty years. We have now reached a point where almost all work in this field is concerned with the addition of newly-discovered stretches.

The system of Roman roads in Britain was a new thing in its day, and has almost no relation to any earlier system of tracks which may have existed before the Roman conquest. Exceptionally, as in the case of the road joining St. Albans and Colchester, the Roman line may tend to follow a route between two important earlier Belgic centres, but this is only a matter of general direction, and not one of detailed continuity of course. There are some places in Britain where the lie of the land and its geology dictate lines of movement to primitive man. The Icknield Way along the Chilterns and the North Downs trackway are such, and in certain stretches of them it appears that the Romans were content to follow suit, improving the going by putting down metalling where none had existed before, but these are some of the few exceptions to a general rule.

Outside the mountainous districts of Wales and the North Roman roads are engineered in straight lines from one good view point to another along routes which present the least difficulties subject to the overriding requirement of the shortest feasible route. Deviations from straightness are rare, and are only caused by natural obstacles of unusual difficulty, though in broken country the successive straight stretches may be quite short.

Two typical examples of deviation in Southern Britain are the following:—At Chute Causeway north of Andover in Wiltshire on the road from Winchester to Cirencester the road makes a great bend westwards round the rim of a deep dry valley to avoid crossing and recrossing it in the course of two miles; at Weedon in Northamptonshire Watling Street makes a slight deviation of a few hundred yards from a straight course to avoid crossing the river Nene twice.

It is remarkable, however, what Roman road engineers were prepared to take in their stride. Often the line meets an escarpment head-on and continues from its summit in the same direct line, but it will usually be found that the climb has been negotiated by a series of zig-zags quite feasible for wheeled traffic. Adjustment to the needs of cartage was an overriding consideration

whether the road was purely military in intention or for general civil use, and there is plenty of evidence that some very heavy loads were moved by road in Roman Britain. An interesting case occurs at Acton Burnell in Shropshire where the Roman road south-west out of Wroxeter has to cross the small but deep valley of a feeder of the Row Brook. Here the remains of two successive crossings of the stream have been identified. The earlier road zig-zagged down into the valley to cross by a small low-level bridge, but at a later date, probably to permit the passage of heavy wagons laden with stone for building in Wroxeter, a much larger high-level bridge was constructed. This well illustrates the fact that in the 400 years of the Roman period modifications are to be looked for in roads just as in buildings.

Practically all the chief population centres of Roman Britain are now known, and they are all joined together by a system of primary roads which has its nodal point at London. At least eight roads converge here and, while there are many cross roads between provincial towns, there is only one major road which provides a continuous line across the whole country without reference to London. This is the Foss Way between the Channel coast at Seaton in Devon and North Lincolnshire, an exception which is certainly due to the fact that it was once related to an early frontier.

Our knowledge of Roman roads has now reached a point where the principal task in field work is filling up the outstanding gaps in the more important roads and dealing with the problem of minor local roads. The latter will be considered below.

Since they were there at the time of the Anglo-Saxon settlement the lines of roads have often been followed in defining the boundaries of counties, parishes, and even fields. An example of a county boundary preserving the line of a Roman road over a long distance is to be found in the northern part of the boundary between Kent and Surrey. Watling Street is a boundary between Midland counties for twenty-one consecutive miles as well as having been used in times past to define the limits of the Danelaw. Hundreds of English parishes are partly delimited by Roman roads and they are liable to act as field boundaries wherever they occur. Owing to the hard, roughly-macadamised surface of many of these roads they often appear on air-photographs, sometimes as continuous parched strips running across the grass fields in dry weather, or as continuous narrow belts of stony ground across ploughed soil. The latter feature can sometimes appear very clearly on the ground, and as most well-built Roman roads had a marked causeway (*agger*), and also side ditches, these features can occasionally be seen more or less preserved across long stretches of country. The hedge bank bounding a field can be the remains of such a causeway, and its continued existence, though buried under much accumulated top soil, can sometimes be deduced from failures in land drainage. Where a Roman road has been carried across undulating ground the engineers had often to interrupt natural lines of drainage, and no doubt they met this problem by providing bush drains under the road or, in more important cases, small culverts. These features have been choked and buried for centuries with the result that a pond or line of swampy ground appears along the uphill side of the former road line, thus betraying its presence where nothing else of it can be seen. Again, when a road descends an escarpment of soft rock like greensand, its course can be permanently bitten deep into the ground as a small ravine, although its course in approaching or leaving this feature may be lost or obscure.

Early land charters can give important clues to Roman roads which were still obvious when they were drawn up, and in trying to establish the line of a road regard must be had to the distribution of various traces of Romano-British settlement along it. Suspected road lines must be treated with caution

when there are no fairly obvious points of departure and destination and an apparently empty countryside, though these criteria will obviously not have the same importance in the military zone.

Many other possible clues could be quoted. While all true Roman roads were made according to defined rules of width, side drainage, etc., stretches can be found where it is certain that a Roman road once ran, but neither ground inspection nor test excavation across the expected line give any trace of it. On the one hand we have model examples with miles of well-preserved *agger* and clearly-visible side ditches like Ackling Dyke, the road from Old Sarum to Dorchester, and on the other there are roads which have foundered completely, leaving no sign even to the experienced eye. This disappearance may be due to poor original construction, to the sinking of the whole of the *agger* into soft ground, or the robbing of its materials for use elsewhere. Some Roman roads have suffered much in this way. The flint metalling of the upper part of Ackling Dyke has been carried away by farmers even on its best preserved stretch, and the Fosse Way was used as a source of gravel for some miles of its course south-west of Newark-on-Trent.

Many roads are marked as Roman on Ordnance Survey maps, and we have no reason to doubt the general correctness of the attribution, but it is an interesting fact that a full examination of a Roman road by excavation often shows that, while the modern road follows its line closely, it is often not placed directly on its remains, but runs by its side. This is not easy to explain. It may be suggested that in Anglo-Saxon times Roman roads, often hopelessly worn and choked by vegetation, with broken bridges and collapsed causeways, were recognised as indicating routes even where they were not directly usable themselves, and that later roads tended to grow alongside, but not on, this indication.

Minor roads

In recent years the subject of minor Roman roads has come to the fore, and in particular since the publication of the 3rd edition of the Ordnance Survey map of Roman Britain in 1956. Mr. I. D. Margary stimulated this interest by his work on the minor Roman roads of Kent and Sussex. His book on this subject, and also his two volume work on the Roman roads of the whole country, are compulsory reading for workers in this field.

It is still too early to make firm pronouncements about the validity of claims which are being made for the existence of a veritable network of local roads of Roman age. Most of this work is now being done in the South Midlands, and quite a lot of it in the upper valley of the Great Ouse where, until the country was examined with close attention, the view still prevailed that much of the Midlands was a wooded and thinly populated area in Roman times. It is now certain that this idea is wrong, for new evidences of settlement are continually being found because they are diligently sought. The question of the kind of minor road system which connected villas, native farmsteads, local industrial sites, etc., is now being asked, and some field workers claim that they can recognise a real network, of better quality than mere dirt roads, and quite distinct from the modern pattern of byways. Undoubtedly here and there these claims are well-founded because of the demonstrable existence of an old road surface, and it would be surprising if fairly close settlement in Roman times was not accompanied by some attempt at a local system, but much remains to be proved, and this can only be done by many tests with the spade. It has long been known that some villas have their own private, well-made, roads connecting them with the main roads, but this part of the villa organisation has received scant attention.

The real difficulty is how to *prove* the Roman date of a piece of minor, but definitely metalled, road. Such things were not unknown in the Middle Ages.

witness the drive which connected the Manor of Pachenesham Magna near Leatherhead with the old Kingston-Leatherhead road. The finding of significant stratified Roman material in it is possible, but not often to be expected. The only real proof is to show close integration with the local pattern of Romano-British settlement, and with that alone. This could be a most lengthy and laborious task.

It is clear that any investigation of this problem of local roads should lead to a greater understanding of rural settlement. Meanwhile the 3rd edition of the Ordnance Survey map of Roman Britain is a good index to the problems which remain to be solved in connection with the more important roads some of which are still obviously incomplete. East Anglia alone contains a large number of oddly disconnected fragments which continue to be a challenge to the field worker, and it looks as though the solution may be found along the lines of the existence of two systems of roads, one early, mainly military, and partly abandoned after the 1st century, and the other later and developed in connection with the settled life of the area.

Wales also has many obvious gaps in its road system, but here much work has been done by Mr. Barry Jones since 1957 which has already closed some of the worst of these. There is also the country between Exeter and Land's End, and Devon in general. Less hopeful of important new discoveries than Wales, it still may not have been quite so empty as it now appears.

Milestones

All major Roman roads were equipped with milestones, set at intervals of one Roman mile (approximately 1,620 yards or 1,480 metres), and such stones have been found at some 65 sites in Britain. Our earliest known examples, dating from the reign of Hadrian, are cylindrical pillars up to six feet high and about 18 inches in diameter, bearing the full name and titles of the emperor, the year of erection expressed in terms of his consulship and tribunician power, and the mileage figure with the name of the place from which it was measured. In later times, however, stones were replaced, so that several may be found at one site, and sometimes recut, so that the original cylindrical form was lost, while the inscriptions on them degenerated into mere statements of the reigning emperor (though other details may still have been supplied by paint). Superseded milestones have been found built into fourth century walls, as at Bitterne, and in Wales some were re-cut as Celtic memorial stones. In more recent times there are records of their use as garden rollers, as ballast in a pilot boat, as gateposts, and as rubbing stones for cattle. This gives some indication of the situations in which they may be discovered, but the field worker should not despair of finding them also, perhaps partly buried, in their original place, beside a Roman road. Since many roads, some of which are of Roman origin, are now being widened and re-constructed the chance of making such finds may be considerable. Apart from obvious cases, where measurements can be made from the site of a stone that is already known, a hint as to possible locations may be given by the behaviour of early parish and other boundaries. Besides using the lines of Roman roads, as noted above, these also used prominent features such as trees and stones as turning points, and a still-standing milestone would make an obvious mark.

ROMAN INDUSTRIAL SITES

Our knowledge of any industrial activities in Roman Britain is still very incomplete, and the types of industrial site most likely to be met with in the field are kilns of various kinds and mines and smelting sites. It is known that there was a degree of cloth production which led to some exports, but there is not much archaeological evidence for this except the occasional findings of specialised implements of this trade like the huge pair of nap-cutting shears found at Great Chesterton in Essex.

Kilns

Kilns for making pottery, brick, tile, and lime were common in Roman Britain. Often they are isolated examples set up to supply a strictly local need for a short time, but sometimes they are grouped together on an industrial scale where good raw materials occur in convenient relationship to the market. Roman building methods required a large supply of brick and tile material, often in highly specialised forms which can easily be recognised.

Large concentrations of pottery kilns occur at Castor and Water Newton in Northamptonshire, in the New Forest, at Upchurch and Halstow in Kent, at Rickingham in Suffolk, at Horningsea in Cambridgeshire, at Doncaster in Yorkshire, and elsewhere. Many of their productions are distinctive so that their distribution round the country can be followed without difficulty. In recent years it has also been established that not all of the ubiquitous 'Samian' ware was imported, for kilns for its manufacture have been found at Colchester.

The presence of pottery kilns is usually betrayed by 'wasters' . . . rejected pots damaged in the firing . . . which may occur in great quantity if a site had a long and productive life. Most kilns were engaged in the production of various kinds of coarse ware, and much attention is now being paid to its distribution away from the place of manufacture. It is also necessary to know that a close dating of kilns is possible by palaeo-magnetic methods. Pottery kiln sites are more often recognised than those for making brick and tile because the proportion of rejected material is much higher in the finer type of manufacture. A good example of a group of kilns designed for all purposes is that found at Holt in Denbighshire where the XXth Legion stationed at Chester supplied its own requirements.

It is unnecessary to insist on the diagnostic value of pottery. Kilns continue to be found in many places, and we still require more evidence about the last days of pottery production along traditional Roman-British lines. Where, and to what extent, was this pottery still being produced in the 5th century? If it exists, how can we recognise pottery of this latest phase? There should be sites in the western half of England and in South Wales which can give us an answer which would be of vital help in lightening the darkness of the problem of sub-Roman life in the 5th and 6th centuries.

Mines and smelting sites

These were concerned with the production of iron, lead, silver, copper, and tin. A single example of a Roman gold mine has been found at Dolaucothly in Carmarthenshire. This was a fairly elaborate establishment with ore-crushing mills and a lengthy aqueduct to supply water to wash out the gold.

Lead and silver working occurred in the Mendips, Derbyshire, Flintshire, Shropshire, and at various sites in the Central and Northern Pennines. In spite of their extensive and successful exploitation little is really known in detail about these sites because they have been vigorously worked in later periods so that most recognisable traces of the Roman establishments have been swept away. This is particularly true of the Derbyshire sites, but one of major importance in Somerset at Charterhouse-on-Mendip still presents some visible features on the ground, although the actual site of the smelting works as evidenced by slag heaps was destroyed by re-working some seventy years ago. Copper was worked in Anglesey, Flintshire, and elsewhere, but here, as in the case of lead, the same factors have operated to ruin the sites. Tin was produced in Cornwall and Devon. It has to be confessed that much of the evidence for these mining industries consists of their products in the shape of pigs of lead and cakes of copper bearing inscriptions showing their place of origin which have been lost in transit.

The smelting and working of iron was the most widespread activity because suitable ores occur in a number of places. Some evidence of minor iron-working can be found almost everywhere, but the concentrations are in East Sussex, the Forest of Dean, Northamptonshire, and Lincolnshire, in the latter two cases on the sites where the industry is carried on today. The conjunction of large quantities of convenient wood fuel with sufficient supplies of ore seated our major iron industry in Sussex and the Forest of Dean until the opening of the 18th century. Romano-Britons were very active in these regions and many smelting sites exist, but they can easily be confused with those of later date, and definite evidence in the form of pottery, etc., is required before a site can be accepted as Roman, for in other respects the methods of work did not vary much over the centuries. Slag was produced in such large quantities in Sussex that it was used to surface the local Roman roads for many miles.

There is evidence for varying degrees of concentration of metallurgical industries at widely spread places like Tiddington by Stratford on Avon in Warwickshire, at Wilderspool by Warrington in Lancashire, and at Corbridge in Northumberland where an arsenal supplying the Wall was situated.

The field worker may be surprised to find pieces of mineral coal on Roman sites in circumstances which make it certain that it was used there at that time. This is quite in order, for outcrop coal was worked in Roman times in convenient places. The coal found in the south came from the Somerset field round Radstock and Bristol. Further north the Barnsley Main outcrop was worked, and evidence for getting coal in Northumberland and Durham is found in the presence of coal stores on Hadrian's Wall. The finding of coal in peasant sites in East Anglia raises the question of its possible transport by water via inland waterways linked by the Car Dyke system of canals. Precise evidence for the full distribution of mineral coal at this time is wanted.

Roman cemeteries and burials

The barrows which belong to the Roman period have been mentioned under Tumuli. It will be noted that their distribution, formerly thought to be confined to the east and south-east of England, is now more widely extended with examples occurring as far north as Hadrian's Wall and Lincoln, and as far west as South Wales. It still remains predominantly south-eastern, however, as also is that of walled cemeteries, thirteen certain examples of which are known at present. Eight of these are in Kent. All are more or less closely associated with villas or extensive settlements.

Burials in stone sarcophagi, sometimes filled with gypsum, are not uncommon, both near important centres like York and Bath, and generally in the more populous areas. Sometimes there is evidence that these burials were marked by more or less elaborate monuments, and we have a major mausoleum at Nettleton Shrub by the Fosse Way north of Bath.

Cremation and inhumation cemeteries are not uncommon all over Southern Britain, and usually give no surface sign of their presence unless some of their contents have been brought up by burrowing animals or the plough. Some are obviously connected with settlements like the large example on the east side of Baldock in Hertfordshire, and where no such associated settlement is known it should be sought.

No certainly Christian cemeteries or burials are known, though there is no lack of other evidence of the presence of Christians in the latter part of the Roman period.

Shrines

Mention has already been made of the occurrence of temple sites under the heading Buildings. Some of these are rural and there must be many more

in towns of which we have little knowledge. There is another type of religious site to which attention must be drawn. In a number of places far from towns, notably at Cold Kitchen Hill in Wiltshire, at Beacon Hill, Harting, in Sussex, at Lowbury on the Berkshire Downs, and at Woodeaton near Oxford, sites occur where the great number of small finds of trinkets, coins, etc., has attracted attention for many years. In one case, Woodeaton, excavation has shown the presence of a Romano-Celtic temple building, but in the others, while they are delimited by a slight surrounding earthwork or, as in the case of Lowbury, by a wall, no building has been found. There may have been one on Cold Kitchen Hill, the most prolific site of all, but the ground has been so disturbed that the chances of finding any traces of it are small.

These places may belong to the pre-Roman religious system and can have been the sites of local cults. The occurrence of so many small finds may be due to the custom of making votive offerings, but it seems equally probable that some may be the casual losses of many local fairs which have been held at these places in time of festival.

In the same category are the sacred wells like that of the fairy Coventina on Hadrian's Wall which was found to contain a great number of votive offerings, chiefly coins.

Sacred wells, however, are unlikely to be found except by excavation or by chance exposure in an eroding cliff face as at South Ferriby on the Lincolnshire shore of the Humber. Any unusual concentration of small finds which cannot be accounted for by normal occupation should be noted.

Another curious type of site about which our knowledge is imperfect is the so-called 'ritual well' or Belgic burial shaft. At various places in Southern and Eastern England, notably at Broadsairs, Ipswich, Sewell near Dunstable, Ashill in West Norfolk, and Bromham near Bedford shafts have been found, sometimes of considerable depth, which contain deposits of pottery (occasionally unbroken), fragmentary sculpture, human remains, animal bones, etc. At first sight it would seem that these are only wells which have been used as convenient rubbish dumps, but the attendant conditions do not seem to bear this out. The reporting of new examples will help towards a solution of the true character of these curious sites.

Water supply systems

It was a Roman habit to pay considerable attention to water supply both for ordinary domestic and industrial purposes and to serve the numerous bathing establishments. At the lowest level of this activity wells are frequent, either steened or timbered. Britain can show none of the great aqueducts such as supply Roman towns abroad, but there are some interesting examples of lesser works connected with water supply. One is the lengthy contour canal which brought water from the river Frome in Dorset to the town at Dorchester. This begins below Maiden Newton and meanders through the country on the south side of the river to give a high level supply to the town. Other examples of this kind of supply exist at Chesters on Hadrian's Wall, at Wroxeter, at Lanchester, and in connection with the ore-washing arrangements of the Roman gold mine at Dolaucothly in South Wales. A minor example of the same kind is the open leet coming from Farnham Park which supplied the Six Bells Roman villa.

Another type is by buried pipe line. The best example of this is the pressure supply which comes into Lincoln along the line of the Nettleham road from the north-east. This must have had a water tower at its source and was a major piece of engineering so far unique in Britain.

In the case of Roman towns the situation of each one in regard to the problem of water supply is worth considering. Lincoln stands on the top of

a high hill and so an engineered supply might be expected. Other towns like Cirencester, St. Albans, or Leicester stand at the level of good natural supply by rivers, but under the most favourable circumstances it is unlikely that communities of any size relied merely on wells or on dipping water directly from the neighbouring river. Field workers should therefore be alert to note any clues which may bear on this question either in the form of dams to impound water as at Wroxeter, the visible traces of open leets approaching the town site, reservoirs inside the towns themselves, and all forms of pipes whether in earthenware, wood, or metal.

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ANTIQUITIES BELONGING TO THE POST-ROMAN PERIOD (A.D. 420 TO A.D. 1066)

General

Nearly 650 years elapsed between the first appearance of Anglo-Saxon settlers in this country and the close of this long phase of English history on the battlefield of Hastings. England as we know it now was being defined and Scotland was drawing together into a single kingdom. The Celtic lands of the South-west and Wales were either over-run and incorporated in England or were left with a precarious independence.

There are great opportunities for field workers in this phase. In England the earlier pagan part of the period has some superficial analogies in the field with the Bronze Age, for a wide knowledge of the funeral archaeology of the Anglo-Saxons is not yet matched by any corresponding wealth of information about villages, agriculture, and domestic life in general. We still struggle towards a better understanding of the Arthurian age of the 5th and early 6th centuries with little success beyond finding a few dubious scraps of its archaeology. But written history has now begun and, however difficult the problems of interpretation may be, the written records of these 600 years provide at the worst, hints, and at the best, positive information, in contrast to our total reliance on archaeological matter for any understanding of prehistoric times. There has been much progress towards a better knowledge of Anglo-Saxon high life and foreign contacts arising from excavations at Yeavinger, Cheddar, Sutton Hoo, and certain war-damaged towns, but the evidence for the life of the ordinary man only increases slowly. A major break-through has been the increasing recognition and classification of datable English and foreign pottery of the 8th-11th centuries, and future studies of its distribution will have a powerful effect in widening our knowledge of the later part of the period.

In the Celtic West and North almost every aspect of life between the 5th and 10th centuries is full of dark places. Written records give much less help here. A good deal is known about Christian sites and monuments, but much of the rest is just beginning to emerge from conjecture. An exception is the growing knowledge of imported pottery as diagnostic material all round the western seaboard. But the archaeology of an important people like the Picts is still largely confined to their symbol stones and the homes and economic background of ordinary Britons, Picts, Scots, and to a lesser extent, of intrusive Northmen, are obscure. But an important beginning has been made in Cornwall and Wales. There will be much painful and relatively unrewarding work, but it is difficult to believe that a careful field investigation of the richer parts of Scotland will fail to produce results, though only excavation can provide that detailed knowledge of key sites which will help to explain much that is now a blank.

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The Anglo-Saxon town

The decline of town life in the late Roman period is a generally accepted fact which has not been altered in its broad outlines by recent work. A surprising degree of building activity has recently been shown to have continued in the Roman town at St. Albans till as late as A.D. 450, and the work now in progress at Cirencester may show something similar there, but the general picture of decay and ruin is not much altered by exceptions of this kind. The earliest Anglo-Saxon (or Germanic) settlers in Britain, the mercenary federate troops brought in to assist in the defence of the Province in the 4th century, must have been familiar with town life to some extent, and traces of them and of other connections with Germanic people in the form of various kinds of hybrid Romano-Germanic pottery have been recognised in both town and country sites in recent years. These pointers may help to explain the process by which most of the eastern half of England was taken over by various folk from across the North Sea in the course of the 5th century, but most of these immigrants, whether they came in the 4th or the 5th century, must have had a background of farming and country life. Archaeology has so far given us no clear indication of any real town life in the 5th and early 6th centuries which belonged to them. On the other hand the evidence for the widespread desolation of the more important Romano-British centres in the south and east of England is general. Besides the certain fact of the survival of some degree of romanity in St. Albans the only other towns in the area of primary Anglo-Saxon penetration where some may be suspected are Lincoln, York, and London. But it is dangerous to be too dogmatic on this point. A more thorough examination of Roman town sites may show that the candle flickered a little longer than we think before expiring.

To the west of the areas of early Anglo-Saxon domination where the sub-Roman princes mentioned by Gildas ruled, there were old centres like Cirencester, Gloucester, Bath, Exeter, Ilchester, and the Roman places in South Wales. Here one might expect some degree of declining town life for at least 150 years after A.D. 420, but none has yet been certainly identified save at Caerwent. Again this may be due to the small amount of work done in this field. We still know almost nothing about locally-produced Romano-British wares of this late period in the West, though it is hard to believe that a basic craft like the potter's simply died in its tracks. The archaeology of the sub-Roman period needs a potter's kiln which can be unequivocally dated to the mid- or later 5th century. When we know the pottery forms . . . if there were any . . . then we may be able to date the sites where they are found.

Pagan Anglo-Saxons have left few traces on Roman town sites even though the presence of their burials close by outside shows that they were living in the neighbourhood. At Canterbury very little trace of pagan material has been found on the city site proper even though it is certain that the Kentish kings had their principal residence there so that it became the scene of

Augustine's conversion of Ethelbert in A.D. 597. In this case damage to the town by bombing has permitted extensive excavation since 1945.

Since it must lie generally above the Roman levels on any site early post-Roman material may escape attention either because it has been removed by later cellar and foundation digging which reaches down into the Roman levels, or because, until recently, there has been a tendency for excavators to pass quickly through the material lying nearest the surface because it is liable to be much disturbed. However this may be, pagan Saxon material is certainly rare on Roman town sites and does nothing to support the view that they had early Saxon populations whatever Romano-British stragglers may still have been living in these decayed places.

The destructions of the late war have provided other large-scale opportunities to excavate a number of our older town sites. On Roman sites like London, Chichester, and Winchester very little has been found consistent with any really early Anglo-Saxon occupation of the sites. Significantly enough, however, the Anglo-Saxon phase of the town of Southampton has been found on the west side of the river Itchen *opposite to, and not on* the Roman site at Bitterne, but east of the later medieval town. Anglo-Saxon Southampton was known as Hamwih and it survives today only in a series of rubbish pits and hut cellars of a squalid type which were much disturbed by digging for brick earth in the early 19th century. The site was thus seriously damaged before any German bombs fell. It does not seem to be earlier than the 7th century, but as it developed it showed important signs of cross-Channel trade connections. Another discovery, this time of a purely Anglo-Saxon town, has been made at Thetford in Norfolk. It was already known that this was one of the most important towns in England at the time of the Domesday Survey. Later it rapidly declined in favour of Norwich, but its earlier history is less clear. Excavation has shown that the earliest phase was well to the north-west of the present town. In the 9th and 10th centuries there was a move to the site of the present town and the place became one of those large centres of commerce like Hedeby in Schleswig and Birka in Sweden which flourished so much at this period. On the south-west side of the present town a considerable area has been recognised with sites of wooden houses, roughly-made roads, pottery kilns, etc. This was a kind of industrial suburb and the material found shows that the town as a whole had many contacts beyond the North Sea. Indications of Anglo-Saxon town life are also being found at Ipswich, also accompanied by pottery kilns, and there are signs of a similar situation at Stamford. The Late Saxon phase of Norwich is also coming to light, and it may be expected that in due course there will be the same experience with many other towns in the lands east of the Severn and Tamar. Oxford is a case in point where every excavation in its centre reveals more of the Late-Saxon town.

The discovery of centres of pottery manufacture belonging to later Saxon times has been important in helping to fill a large gap in our knowledge of pottery sequences in Britain. The distinctive products of the kilns of Thetford, Ipswich, and Stamford are now being recognised in many places. There is also the so-called St. Neots ware, the first of this new group of pottery styles to be securely identified. The contribution of this new light on post-pagan Anglo-Saxon pottery to Anglo-Saxon field studies generally will be great and is a major break-through. Much pottery is also being found which has been imported from well-known centres of manufacture on the Continent, mainly in the Rhineland, and some of this came in as containers for wine.

It is clear that some Anglo-Saxon towns had made a lot of progress before the Danish attacks began in the 8th century, and too much stress must not be placed on the organisation of local fortresses (burhs) as a leading cause of the development of the pre-Conquest town, though this factor certainly made a

big contribution during the struggle of Alfred and his successors against the Danish armies and the settlements which resulted from their conquests. By the end of the Anglo-Saxon period, as evidenced by the Domesday Survey, fully 10% of the population of England was urban, a figure probably in excess of that obtaining at the time in most of North-west Europe.

The recognition of the Anglo-Saxon phase of a town will be a task for those who watch excavations on town sites. It will normally appear through its pottery and coins, for the pits and traces of wooden buildings which may appear will often be difficult to distinguish from those belonging to the Middle Ages. There may also have been defences, only surviving in the form of a filled-up ditch, and this has recently been noted at Tamworth, the ancient capital of Mercia. Work on the north side of the cathedral at Winchester has shown solid survivals of an important Anglo-Saxon town with evidence of the re-surfacing of the old Roman streets in this period, though the area is too much involved with the early ecclesiastical affairs of Winchester to tell us much about the ordinary life of the place.

Dwelling sites and villages

Until recent years field archaeology has made little contribution to our knowledge of the houses belonging to any grade of Anglo-Saxon society and the subject of villages remains obstinately obscure. Most of the few dwelling sites found have proved to be small, squalid, and utterly at variance with the accounts of the better class of house given in contemporary literature. Of course all of these finds have been peasant houses at best, but the description of Hrothgar's royal seat, Hart Hall, in the poem 'Beowulf' with its carved gables and its walls decked with patterned hangings, shields, and weapons contrasts painfully with the miserable sites of hovels found until recently.

Now two important sites, one in the north and the other in the south of England, have thrown much more light on the princely residences of the Anglo-Saxon period. Both have the character of country seats with the necessary offices and although the structures revealed are important they are unlikely in either case to represent the finest type of royal residence. At Yeavering near Wooler in Northumberland a complex of wooden buildings dated to the first half of the 7th century has been excavated by Mr. Brian Hope Taylor. This can certainly be identified with the country seat of Gefrin belonging to Edwin, the first Christian king of Northumbria. Here Paulinus also baptised many of the Northumbrians in A.D. 627. The site was located from the air and it contained ample and well-built accommodation entirely constructed of timber which included a large hall and a number of subsidiary buildings two of which have been regarded as a pagan shrine and a Christian church. There was also a large timber structure like a 'cuneus' or segment of a Roman-style amphitheatre presumably designed for public assembly and obviously a copy or survival of Roman practice. Nothing but foundations of sleeper beams and large timber uprights remained anywhere on the site, but it was plain that the main hall must have been a building with some pretensions to grandeur. A similar site which has been identified by the same means at Milfield nearby is King Oswald's seat of Melmin of slightly later date.

In the south Mr. Philip Rahtz has conducted a series of excavations on the site of the Anglo-Saxon and post-Conquest royal manor at Cheddar. This is a known residence of the kings of Wessex, the major part of which appears to have been planned in its latest form in the 10th century, though its beginnings were earlier. The work has revealed the plans of timber buildings, the largest of which was a great hall with a roof span of 60 feet. There were also a chapel and lesser buildings. One of these has been interpreted as a ladies' bower and another was certainly a rotary mill worked by horse power and flanked by two other wooden buildings one of which shows signs of having

been a kitchen or bakehouse. This site had continuous occupation as a royal manor for most of four hundred years before it passed to the Bishops of Bath and Wells and its earliest phase is at least 100 years later than Yeavinger.

These finds point the way. The location of many royal villas is known from historical sources, but not all will be so conveniently free from later development. A more modest example of the better kind of Anglo-Saxon residence has recently been excavated at Sulgrave in Northamptonshire. This was a thegn's hall. Sites of this kind must be numerous, but the chances are that the Anglo-Saxon phase of any manorial site will lie under many later rebuildings.

We have not been so lucky with villages and more modest dwellings. It is unfortunate that the only early Saxon site which can securely be regarded as a considerable part of a village was excavated at Sutton Courtenay by Mr. E. T. Leeds under conditions which were adverse to a complete examination of the site. Nothing better than small huts was found. These were comparable to those regarded as belonging to serfs in the eighth and early ninth century site at Warendorf in Westphalia where the settlement consisted of large timber farmhouses nearly 100 feet in length accompanied by working huts, granary and stack stands, and the small huts of dependents.

Today there are at least fifty sites in England where there is archaeological evidence for the domestic side of Anglo-Saxon life in its earlier stages, but they seldom amount to very much. One of these sites, Wykeham near Scarborough, has revealed a number of huts, but only under conditions quite unfavourable for study. Most of the rest are minor finds; isolated huts out in the fields and small finds picked up in the course of public works.

The problem of the kind of house current in both towns and villages in Middle and Late Anglo-Saxon times can only be solved by the keen observation of slight clues which lead to excavation. From late pre-Roman times till the Middle Ages the better class house in much of North-western Europe was a bow-sided ('boat-shaped') long house built mainly of timber. Many examples have been found on the Continent and a site which shows both the better and poorer types of houses well is that at Warendorf mentioned above. Here the large houses were bow-sided timber structures nearly 100 feet in length with opposite pairs of doors set in the middle of the sides. In view of the regular use of such houses in the parts of Europe which sent many Anglo-Saxon and Scandinavian settlers to England it has long been a puzzle why they have not been found here. In the past few years they have at last begun to appear on sites at Maxey in Northamptonshire, Buckden in Huntingdonshire, Cheddar in Somerset and Yeavinger in Northumberland. These examples cover a period between the seventh and eleventh centuries and are comparable in most respects to the Continental types. Their length and width have a general ratio of about three to one, and while their average length does not greatly exceed fifty feet, larger examples may be expected. They are all more or less bow-sided, i.e. the sides have an outward convexity in plan, and while the side walls of the earlier examples seem to have been made of vertical close-set timbers standing in a continuous trench, later examples had their wooden walls slotted into a continuous horizontal wooden sill which was itself in the ground. Mr. B. Hope Taylor has given cogent reasons for believing that this bow-sided construction gives advantages of stability, reduced wind resistance, greater internal space, and economy in the use of timber.

Nothing can remain of these buildings but the slot in which the walls stood, associated post-holes and traces of a hearth. There may also be a scatter of domestic rubbish. Any casual modern linear disturbance of the ground like the running of a pipe trench will usually cut through these features in a way which will hardly convey their meaning to the untrained eye, and so many of

these houses must have escaped discovery. With any luck, however, scraping machinery may show up a significantly large part of the plan. This was the case at Buckden in Huntingdonshire where, during the construction of a by-pass road, Mr. C. F. Tebbutt noted an area of clay stained with wood ash and burnt clay. Closer examination showed that these were the top indications of a wall slot. This was followed up for forty-six feet and eventually the whole plan of a late Saxon bow-sided house was cleared.

Much more work will have to be done before we know much about these houses in England. At Maxey in Northamptonshire houses of this kind appear to belong to Scandinavian settlers on the evidence of associated pottery and it must be expected that these houses will be found surviving the Norman Conquest.

Great advances have been made in our knowledge of Anglo-Saxon pottery belonging to the period between the eighth and eleventh centuries. This is now recognisable in the categories of St. Neots, Thetford, Stamford, and Ipswich wares, these names deriving in the last three cases from known sites of manufacture. Imported wares from the Rhineland and North France can also be found which help to date deposits and it will often be from the finding of these later wares alone that we shall be able to claim archaeological evidence for the existence of a modern village in pre-Conquest times. Of course historical evidence for this phase already exists in a vast number of cases, if only from their appearance in Domesday Book. But knowledge of these wares is now indispensable to the field worker.

Reverting to the early Anglo-Saxon village, no certain explanation can be given for the general scarcity of sites. The obvious one may be that many towns and villages of today are the direct descendants on the same sites. It is possible, therefore, that the evidence for this early phase lies in the lowest stratum of made soil underneath them. The recent development of interest in deserted medieval villages and the excavations on their sites may ultimately reveal the ancestral settlement if the work is carried down to the virgin soil. The many pagan cemeteries imply the existence of sizeable settled groups though their topographic relation to these is still unclear. We badly want an uncluttered early Anglo-Saxon settlement with a certainly associated cemetery. Now that water and gas are being carried into the country and through villages the trenches now being cut may help by giving sections through all the occupation phases under the modern village.

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Dwelling sites in the Celtic West and North

It is only in recent years that any serious attention has been paid to the archaeological background of everyday life here, and much is still obscure. In Scotland, Wales and the South-west of England there are groups of huts and farmstead sites which are either known by excavation, or suspected, to be the homes of the local people of the period from the fifth to the eleventh century and there is little reason to believe that the mode of daily life altered

very much in most of this peripheral region right on into the medieval period. There was much coming and going between all these regions which also tended to look south-westwards for their foreign contacts, and the Irish Sea was a unifying factor in their affairs.

Excavation in Cornwall, South Wales, North Wales, Scotland, and Ireland have now provided an important new clue to the age of some of these sites in the form of types of pottery which, in some cases, have been imported from as far away as the Byzantine Empire and Egypt. These came mainly as containers for wine and oil. Our growing understanding of this new material is due to the work of Messrs. C. A. Raleigh Radford and A. C. Thomas, and now that it is being defined and classified more continues to be found, but there is nothing to suggest that it was ever plentiful or represents more than occasional contacts. None of this Mediterranean material has yet been found nearer to the Anglo-Saxon area than North and East Somerset and East Devon.

It is necessary to be cautious in accepting all of the material found on these sites as being imported ware. Some of it, like the combed amphora and the red ware with Christian symbols, certainly came from the Mediterranean world, but other forms could have had a late-Roman or early post-Roman origin in this country, though it must be admitted that at present we have no clue to places of manufacture. It has been claimed that these may have been made in France. All types of this pottery can sometimes be picked up on sand-dune and coastal sites like that at Bantham in South Devon, but it is of most value when it is in association with obvious dwelling sites.

The pattern of the movements by sea in the Biscayan area and up and down the Irish Sea which is implied by some of these finds accords very well with the movements of the Celtic saints between Western Britain and the Continent as described in their Lives. Any distant connections with the Mediterranean world were probably brought to an end by the Moslem advance westwards in North Africa which led to the closing of the Straits of Gibraltar and the invasion of Spain. The final blow to any independence in the South-west was the victory won by Edgar of Wessex at Hingston Down on the west side of the Tamar in A.D. 838.

Another kind of pottery certainly made in Britain which may yet help with the identification of Dark Age sites is the so-called 'Votadinian' ware which was first found in any quantity at the enclosed hut-group of Pant-y-Saer in Anglesey. This is a very crude, poorly-fired ware whose form seems to hark back to the bucklet-like vessels of the Iron Age, but it is so weak that it seldom survives in pieces of any size, and in the ordinary hazards of an open site it is liable to return to its native mud.

In the North its descent from Iron Age forms and its currency in the later Roman period seem clear, but in the Welsh zone at sites like Old Oswestry, Carn Boduan, Eddisbury, Castell Odo and Pant-y-Saer it has been claimed as a post-Roman native ware making a fresh start. It now seems that it was present in an Iron Age context at Castell Odo and no progress can be made to a solution of the puzzle without much excavation and the discovery of this ware in clear relationship with other datable material. Its quality is so poor that it is not likely to be picked up on sites in recognisable form.

Steady progress is being made with the identification of many rural dwellings and farmsteads of this period in the South-west. Work at Gwithian has been important for the earlier part of the period and an excavation giving the full plan of a farmstead of the last centuries before the Norman Conquest has been made at Mawgan Porth near Newquay.

Turning to Scotland, in the east of the country the kind of farmhouse associated with the earth-house is coming to light, and recently excavated examples

belong to the latter part of the Roman period, but there seems to be no obvious reason why they should not continue into the period of the Pictish kingdom, or even later. So far any evidence for this is lacking and can only be found by more excavation, though an obvious first step will be the recognition of sites in the field. So far this has only been achieved by following up the discovery of earth-houses. Wheel-houses and wags have already been dealt with above (pp. 62, 63) and their position as features of Iron Age life in Northern Scotland is in no doubt, but their continued use here and there into the Dark Ages can hardly be doubted. The problem of identifying the various types of post-Roman standing among the Lowland hills has been considered by the Scottish Commission on Ancient Monuments. The lack of any useful diagnostic material is a serious difficulty where structures were of an elementary type, and it is probable that there was little significant change in the pattern of rural life for centuries in these lands where life could be poor and hard.

In North Wales we are tolerably certain about the kind of settlement in which ordinary folk lived in Roman times. While there are isolated round huts the common type of site is the enclosed hut-group which consists of two or three round huts some thirty feet in diameter grouped inside a walled enclosure which is not strong enough to be truly defensive. The huts often have rectangular annexes attached to them and there may be a number of small separate structures some of which have been interpreted as workshops. These enclosed groups occur mainly on lower ground and are plainly associated with small ancient fields which are sometimes terraced on the hill slopes as at Caerau close to the half-way point on the road between Caernarvon and Criccieth. There are also unenclosed groups of huts and single examples at a much higher level some of which also seem to be connected with cultivation while others may belong to summer pastures. But excavation has done little more than prove that many were occupied in the later part of the Roman period and this by the presence of Romano-British pottery often poor, sparse, and much-mended. The ancient Welsh were never great pottery makers or users and in the absence of pottery from outside sources they would readily revert to the use of wooden vessels, leather, and basketwork. Thus the presence of Romano-British pottery on sites, often in a very fragmentary state, does not mean that these sites were abandoned in post-Roman times.

This type of site has its finest example at Din Lligwy in Anglesey where the size and excellent construction of an enclosed hut group suggests the home of a native chief. There has been little certain evidence of Dark Age life. A crucial site is the enclosed hut group at Pant-y-Saer in Anglesey where an extremely crude kind of pottery was found in a site which, on its plan alone, would be quite normal in Roman times. The absence of all but the smallest scraps of Romano-British pottery suggests that it did not long overlap the Roman period and the finding of a fine silver pennanular brooch definitely belonging to the Dark Ages makes it clear that someone went there in that period, but the absence of any depth of soil on the site and of any certain stratigraphical relationship between the crude pottery and the brooch leaves everything uncertain.

Recent work by Mr. L. Alcock in South Wales has revealed a dwelling of a higher class than these settlements of farmers and herdsmen which belongs without question to the Dark Ages. This is the site at Dinas Powy near Cardiff. It has some natural strength and attracted slight and uncertain Iron Age settlement, but it was unoccupied in Roman times. In the fifth century it became the home of a local chief who set up two dry-stone buildings, one 50 feet by 27 feet and the other 25 feet by 22 feet, with parallel sides and rounded ends. These stood in a compound defended partly by steep slopes and partly by a bank and ditch. Industrial hearths were found in a corner of the enclosure

and the rubbish of the site showed an occupation which extended from the fifth to the seventh century. Local iron ores were smelted and there was evidence for making jewellery and dressing leather. Various scrap materials in bronze and glass along with pottery imported from the Mediterranean and elsewhere put the age of the site beyond doubt.

On the other side of the Bristol Channel the site known as Castle Dore, a small Iron Age hill-fort inland from Fowey in Cornwall, has also been shown to have been re-used to site the hall of a local magnate in post-Roman times, and there is good reason to think that its most famous occupant was King Mark of the Tristan and Isolde story.

See:

- A. C. THOMAS: Imported pottery in Dark Age Western Britain. *M.A.*, iii, 1959, 89-111.
———: Gwithian, ten years' work, 1949-58. *P.W.C.F.C.*, 1958, 18-24.
———: Post-Roman rectangular houseplans in the South-west. *P.W.C.F.C.*, ii, No. 4, 1959-60, 156-161.
L. ALCOCK: Dinas Powys. *B.B.C.S.*, xvi, 1956, 242; xvii, 1957, 131-136.
AILEEN FOX: Some evidence for a Dark Age trading site at Bantham, South Devon. *Ants.J.*, xxxv, 1955, 55-67.
C. W. PHILLIPS: The excavation of a hut site at Parc Dinmor, Penmon, Anglesey. *Arch. Camb.*, lxxxvii, 1932, 247-259.
———: The excavation of a hut-group at Pant-y-Saer, Llanfair-Mathafarn-Eithaf, Anglesey. *Arch. Camb.*, lxxxix, 1934, 1-36.
W. J. HEMP and C. A. GRESHAM: Hut circles in North Wales. *Ant.*, xvii, 1944, 185-196.
W. E. GRIFFITHS: The development of native homesteads in North Wales. *Ant.*, c, 1951, 174-186.
O. PEARCE SEROCOLD, G. MAYNARD, and FLORENCE PATCHETT: A Dark Ages settlement at Trebarveth, St. Keverne, Cornwall. *Ants. J.*, xxix, 1949, 169-182. (Sub-Roman pottery).

Anglo-Saxon defensive structures

We have little practical knowledge of any defensive works in England other than linear earthworks which belong to the first 400 years of the Anglo-Saxon period. Ten years ago our ignorance was almost total, but some improvement can now be shown. There are episodes in the early history of Anglo-Saxon England which seem to require the existence of fortifications for them to make sense. An example of this is the early struggle of the kingdom of Bernicia after its reputed foundation by Ida at Bamburgh on the Northumberland coast in A.D. 547. The local British reaction to this intrusion was sharp, and it was not until the accession of Ethelfrith in A.D. 593 that the early Bernicians were able to do much more than maintain their position on the coast. The rock of Bamburgh must have been a fortified base during this phase and afterwards when Northumbria became a considerable power, but the building of the later castle on the site has masked or destroyed any earlier work.

The recent excavation of Edwin's residence at Yeavering sixteen miles inland from Bamburgh (p. 102) has shown that the earliest Anglo-Saxon structure on the site was a defensive work of sub-rectangular form resting at one side on a steep slope down to the river Glen. It is about 550 feet across and its defences seem to have consisted of a double stockade with a space of about 40 feet between the two. Nothing is visible on the ground today, and most of our knowledge of it comes from air-photography.

This is the only work about which we can speak with any degree of confidence in the period before the end of the 8th century, and it has remained recognisable because it is out in the open country, and has not been overlaid by later buildings. There is a unique, eccentric, and presumably post-Roman stone-built fort at Hamsterley in County Durham which may belong to the British side of the wars between Northumbria and the British kingdoms of Elmet and Strathclyde. It has never been satisfactorily dated by any finds, but it is difficult to believe that it is not an attempt to copy Roman work.

The necessity of building and maintaining burhs is insisted on in many Anglo-Saxon charters, and a well-known law of King Ine of Wessex (A.D. 689-726) sets up a scale of penalties for breaking into burhs. Although later it was a true stronghold, at this earlier stage in its history the burh was little more than a stockade or strong enclosure round the residences of kings and noble landowners. Its purpose was to keep out casual marauders, and it was not till the onset of the Danish wars that more powerful defences were built at strategic points defending whole areas.

In the 9th century the position becomes a little clearer. We will pass over the recorded reconstruction of the Roman walls of London and Colchester by Alfred and Edward the Elder and consider various sites in Wessex. There are Wareham, Cricklade, and Wallingford. At Wareham and Cricklade the Anglo-Saxon age of the defences which survive has now been proved by excavation. At Wareham the works consist of powerful banks and ditches isolating a rectangular area between the parallel-flowing rivers Frome and Piddle which provide water defences along the north and south fronts. Most of the modern town of Wareham is still contained within these defences which were reorganised but not changed in general plan after the Norman Conquest. There was a British enclave in the Isle of Purbeck which was by-passed by the advance of the West Saxons into Dorset and Devon, but it cannot have maintained its independence, and there is ample evidence that Wareham was an important Anglo-Saxon town. It was seized by the Danes for a short time in A.D. 876, and there can be no doubt of its importance as a fortress. In late Anglo-Saxon times its earthen bank was crowned by a stone wall.

At Cricklade on the Upper Thames at the northern frontier of Wessex there is an earthwork about 450 yards square which fully encloses the small modern town with room to spare. This earthwork has been shown to have been fronted by a rather weakly constructed stone wall incorporating re-used Roman material, and all the circumstances suggest that this was a work of Alfred. It is certainly neither late-Roman nor medieval. A somewhat similar defensive work at Wallingford at an important crossing of the Middle Thames has not been dated, and it may be connected with the great medieval castle which formerly dominated the site, but it may equally be of Anglo-Saxon origin, and it is significant that William the Conqueror crossed the Thames here on his circuitous march from Hastings to London.

It is a matter of history that Alfred began the organisation of a system of fortified burhs for the defence of his territories, and this was set out in the list known as the Burghal Hidage which provided for their upkeep. This process was actively continued by his son and daughter, Edward the Elder and Ethelfleda, in their wars against the Danes in the Midlands and East Anglia.

These burhs were designed to consolidate the reconquered territories and in a number of cases have become the capitals of shires as at Bedford, Northampton, and Huntingdon. The attempt to identify Edward's burh at Witham in Essex ended in failure, for the earthwork crowning the hill there proved to belong to the Iron Age, but the King's Ditch, which provides a water defence for the southern part of the town of Bedford with the aid of the river Ouse, may be his work, and it is probable that some original defensive works of this period are now incorporated in the defences of medieval castles. Since the burhs were placed at strategic points they must have been surviving at the time of the Norman Conquest. Castles like Huntingdon and Tamworth can hardly have failed to make use of the earlier work, possibly as the basis for the defences of their baileys. This can only be settled by excavation, and the case of Framlingham in Suffolk may be significant. Here the Norman castle was built by Hugh Bigod on the most defensible site, and it is fairly certain that he moved an earlier settlement on it to a new site, witness the

pre-Conquest cemetery recently found within his outer bailey. An inspection of the ground suggests very strongly that the outer bailey defences of Framlingham Castle are in the main those of the earlier settlement.

The following articles may be consulted:—

ROYAL COMMISSION ON HISTORICAL MONUMENTS (England): Wareham West Walls, M.A., 1959, iii, 120-138.

THE ANGLO-SAXONS: Studies presented to Bruce Dickins, Bowes and Bowes, London, 1959. F. W. Wainwright, 'Ethelflaed Lady of the Mercians', 53-69.

Dark Age strongholds in Scotland and Wales

Our knowledge of hill-forts in Scotland at the beginning of the post-Roman period is still slight. At the time of the Roman advance in the first century there were many and the destruction of a considerable number have followed various Roman victories. But we have no solid information about the frequency or style of the rebuildings which presumably took place here and there, and particularly after the abandonment of the Antonine Wall. It seems that in the third and fourth centuries some, at least, of the Lowland tribes entered into defensive treaty relationships with Rome and how the hill-fort situation developed must have depended to some extent on this. Recently found evidence for the late re-occupation of the Roman fort at Cramond on the Forth raises interesting possibilities, but as Roman interventions in force north of the Forth and Clyde line seem to have been few and short-lived we must presumably look there for the best evidence of contemporary Caledonian ideas on defence.

There is certainly a sequence of new forts on a number of the old Iron Age sites of the days before Agricola. As mentioned above in the hill-fort section (p. 72) they are normally quite small and simple stone-built ring-works standing well inside the older defences. An attempt has been made to interpret some as summit citadels to a wider system of outworks defending lower parts of the hill, but the latest opinion finds no clear field evidence of this. The idea of late 'nuclear' forts is thus in abeyance for the time being and we are required to regard the summit ring-works alone as the final phase of the fortification of the site. We do not yet know the date of these.

As a matter of historical certainty the post-Roman rise of the kingdoms of Strathclyde (British), Dalriada (Scottish) and the Picts was associated with strongholds like Dunadd, Dunbarton, Dundurn, Dunnottar, Dunollie, and Duneidin. They were fought over in the shadowy wars of Dark Age Scotland but, while plain enough as defensible crag sites today, all pre-medieval work of any importance has been swept away and only a trifling amount of archaeological rubbish has yet been found associated with them to attest this phase in their history. We badly require more knowledge here and are only tantalised by finds like those made at the Mote of Mark on the coast of Kircudbrightshire. This fort had a timber-laced Iron Age beginning and this phase was ended by fire and vitrification. After this there was another occupation whose defensive details are not clear, but this produced pottery and clay moulds for making jewellery which cover the Dark Ages from the fifth to the eighth centuries. The same can be said of a number of duns (see p. 76) which, although they were built and flourished earlier, seem to have had secondary Dark Age re-occupations of a feeble kind.

This situation does not provide much scope for the ordinary field worker, but two things at least can be done.

First, a thorough search can show how many defensive sites remain (and they are many) with the leading details of their form and situation. Second, a sharp eye can be kept for any small finds related to them. Because of the wretched yield of relics from careful excavations on the average Scottish site

this would seem to be an unhelpful suggestion, but there is no escape. It will only be by firmly relating datable material to the various phases of defensive structures that they can be sorted out.

The archaeology of the Picts is still very obscure. Progress has been made with the study of their monumental art and there are some items of jewellery which clearly belong to them, but we should very much like to know the location and details of the '*munitio Brudei*' near Inverness where St. Columba interviewed Brude Mac Maelchon, the king of the Northern Picts, in A.D. 565. There are many strong places in the Pictish lands with remains of successive defences and we want to know if the final stage belongs to the Picts of the Dark Ages. Hill-fort sites in Scotland are poor in finds and so every circumstance which could favour the survival of organic remains should be noted. Much common gear must have been made of wood, leather, and bone which can survive quite well in bogs and deep mud. An example is the small loch which closely adjoins the fort of Dunearn in Fife. If truly contemporary with the fort it may contain informative rubbish thrown out of the defended area.

In Wales the local peoples were increasingly compelled to rely on their own resources for defence some time before the Roman province came to an end. We have much more to learn about the affairs of Wales in Roman times. For long the view prevailed that by the middle of the second century the country had been completely pacified and that the Roman military establishment had been allowed to run down. This is not so certain today when further work on Roman military sites tends to discount this view, but it is probable that in the third and fourth centuries the chief threat to the peace of the region came from Irish sea raiders. This may be the explanation of the continuance of a great fortified hill-top settlement like Tre'r Ceiri in Carnarvonshire in Roman times, but it would seem less likely as an explanation of the re-fortification of Dinorben as early as the second century. This could be due to a local revolt. At all events people, and presumably local leaders, were living in a number of former strong points before the full end of Roman rule and probably for a long time after. In the less easily defensible south-west area of Wales settlers from the Irish tribe of the Desi were introduced to help defend the area against other Irish and were to make their presence plain on the early Christian monuments of the area. (See Memorial stones, p. 116.)

Traces of this re-occupation of old hill-forts have been found at Dinorben, Dinas Emrys near Beddgelert, Carn Boduan in Carnarvonshire, the Breiddin in Montgomeryshire and Moel Fenlli in Denbighshire, while there are less certain indications at Old Oswestry and at Deganwy overlooking the estuary of the Conway. There is no decisive evidence for the re-fortification of these ancient strong places, but the natural strength of their sites singled them out for use in time of trouble, and at least some of this phase may be older than A.D. 450. Unfortunately our evidence depends entirely on excavation and many important sites which may throw more light on this have not been examined. Thus we can only indicate the trend of such evidence as we possess without making any positive assertions. Much will depend on a wider knowledge of the distribution and place of manufacture of the broadly sub-Roman types of pottery which appear in very small quantities on both Scottish and Welsh sites. The field worker by himself cannot do much to solve this kind of problem, but the remarks made above about his possible activities in Scotland apply equally to Wales and probably also to the South-west of England.

Finally, many of the little ring-works which cluster so thickly in Pembrokeshire and Carmarthenshire may be attributed to this period; while some evidently belong to the Iron Age others, like Trelissey near Tenby, continued in occupation through the Roman period, while yet others such as Howell's

Castle, also near Tenby, appear to be entirely late. The dating of such works must depend on excavation; the field worker can only locate them and note any peculiarities of structure. Any surface finds of occupation material should also be collected.

See:

F. W. WAINWRIGHT (editor): *The Problem of the Picts*, Nelson, 1955. Fortifications, by R. W. Feachem, 70-86.

H. N. SAVORY: *M.A.*, i, 1957, 150 (Dinorben).

—: *Dinas Emrys*, *Arch. Camb.*, cix, 1960, 13-77.

W. G. THOMAS and R. F. WALKER: *Excavations at Trelisey, 1950-51*, *B.B.C.C.*, xviii, part 3, 1959, 295-303.

Pagan Anglo-Saxon cemeteries and burials

During their pagan phase which lasted for at least 250 years the Anglo-Saxons are in much the same case as their distant Bronze Age predecessors in Britain, for we know a great deal more about them from their graves than from their homes.

Many Anglo-Saxon cemeteries have been found containing either cremations, or inhumations, or a mixture of both, and the archaeology of the 5th, 6th, and 7th centuries leans heavily on the evidence from these. The inhumations are often accompanied by a lot of grave goods like weapons, personal adornments, etc., and the pots in which the cremations are placed are important for dating purposes, some of them belonging to the very earliest days of the settlement. By itself the mode of disposing of the dead is not a decisive criterion of date, though cremation is, in general, an older form of burial rite among the Anglo-Saxons than inhumation. There are also many cases of single burials and small groups of burials as well as the frequent placing of secondary interments in the barrows belonging to prehistoric people.

The main mass of burials is found in the South-east, East Anglia, and Lincolnshire. They are well dispersed over the Midlands but fade out west of a line drawn from Bournemouth to Bristol, and they do not cross the Severn. They also die out to the north-west of the Midlands, but there are many in the valley of the Trent and its tributaries, the Peak District, and East Yorkshire. North of the Tees they are rare, and they do not extend into the Lowlands of Scotland.

While the great majority of burials is in flat cemeteries with no recognisable surface indications to help field workers, primary burial in barrows also occurs, and there are considerable groups of Anglo-Saxon barrows in Kent and, less certainly, in Sussex. Away from the South-east barrow burial is much less common, but it is found as far north as Lincolnshire, Derbyshire, and possibly Yorkshire. Primary burials in isolated barrows are normally those of important people, but there may be other humbler graves grouped round which are not obvious, and a few barrows can be the only visible mark of large cemeteries as at Loveden Hill near Grantham and Farthing Down near Coulsdon in Surrey. The barrow cemeteries of the South-east are now in poor condition because they were dug extensively in the 18th and early 19th centuries when they were more obvious than they are now. These grouped barrows were seldom large, but some of the more isolated examples were considerable mounds not obviously distinguishable from those belonging to earlier periods.

There is an isolated group of ship and boat burials which has been noted in Suffolk at Snape and Sutton Hoo near Woodbridge. These are associated with the estuaries of rivers. In the case of Snape the mound which covered the ship burial there seems to have been levelled long before its excavation, but at Sutton Hoo something nearer the original conditions survived in what seems to be a royal cemetery of at least eleven mounds. Nine of these were

always quite small, but there were two larger ones present. The lesser of these proved to contain a boat burial. The largest, which had once been still larger, was oval in plan with axes of 80 and 50 feet and a height of 12 feet. This partially covered the famous ship burial.

It is probable that these boat and ship burials are confined to the coast of East Anglia, for they seem to represent the continuance in England of a contemporary Swedish mode of noble burial because of the Swedish origin of the East Anglian royal house. It is worth noting that these ship and boat graves were all below the old ground surface so that the removal of the overlying mound need not disturb them, and they could be found by chance, though their sites are not likely to be far from navigable water.

Pagan Anglo-Saxon cemeteries, other than those including barrows, cannot be found by direct inspection of the ground unless a cremation cemetery is revealed by broken pottery scattered by the plough, or graves appear in section in gravel pits or similar excavations. When they have been found the question of their relation to settlement sites arises. There is no clear evidence on this subject. Some, like the big cremation cemetery on Mill Heath at Lackford in Suffolk seem to be far from any very likely place, while others, like the Sleaford cemetery in Lincolnshire, are close to places where early settlement is virtually certain. It seems probable that the pagan dead were not buried close to the habitations of the living, but were placed towards the limits of the land belonging to their group, though this is a point on which we require more information.

Although a great number of Anglo-Saxon burials have been found and studied there has been little systematic attempt until recently to work out all the details of individual cemeteries. This usually happens because there are various obstacles overlying parts of them which cannot be disturbed, but where there are none every effort should be made to get all the details. It is worth noting that there is occasional evidence that some graves were originally marked by wooden head and foot boards, and that small rectangular wooden structures stood in some cemeteries which may have been shrines. Some cemeteries have been fenced though the clearest example of this, Shudy Camps in Cambridgeshire, may be early Christian even though there was much grave goods with the burials. Every now and again undoubted pagan burials are found in village churchyards, an example being the cremation found recently in the churchyard at Pagham in West Sussex. This suggests the possibility of a continuity of site from pagan to Christian times, but this must be rare. The beginnings of Christian worship in a district were usually marked by the setting up of a cross which became the site of services conducted by priests from a minster. Sometimes this became the place of Christian burial and was surrounded by a fence. Later a church was built, and so today's arrangements came into being.

The field worker should remember that an apparently isolated grave may be an outlier from a cemetery so that any further disturbances of the soil liable to reveal it should be watched. Many Anglo-Saxon cemeteries must have been destroyed centuries ago, but at least 20,000 burials have been found in this country in the last 150 years.

The following books and articles may be consulted:—

- T. C. LETHBRIDGE: *Victoria County History of Cambridge*, Vol. i, 310-320. (A valuable account of the very important Cambridgeshire cemeteries).
———: *A pagan Anglo-Saxon cemetery at Lackford, Suffolk, C.A.S. Quarto publications*, No. 6, 1951.
G. W. THOMAS: *The excavation of an Anglo-Saxon cemetery at Sleaford, Lincs.*, Arch. 1, 383-406.
C. W. PHILLIPS: *The excavation of the Sutton Hoo ship burial*, *Ants.J.*, xx, 1940, 149-202.

Victoria County History of Bucks., i, 1905, 331-335, (Account of the Taplow barrow).
H. READ: The Anglo-Saxon burial at Broomfield, Essex, P.S.A., xv, 250-255.
H. F. BIDDER and J. MORRIS: The Anglo-Saxon cemetery at Mitcham, Surr. A. C.,
lvi, 1959, 51-131.
GRAHAM WEBSTER and J. N. L. MYRES: An Anglo-Saxon urn-field at South Elking-
ton, Louth, Lincolnshire, A.J., cviii, 1951, 25-64.

Undated cemeteries, and long-cist graves

In all parts of Britain it is not uncommon for burials to be found for which there is no obvious explanation. They are not accompanied by any grave goods which would identify them, they are not in wooden coffins, and they have no obvious association with any community which exists or is known to have existed in the past.

Casual single burials can always occur, and they probably concern former tragedies to which there is no clue, though it is seldom that a diligent search will fail to reveal some trifling object like a coin or a metal dress attachment which will give some evidence of age. Where it is a casually-found skeleton which comes to the notice of the police and so to the coroner a meticulous search for such evidence is seldom made, nor is it always possible.

There are also special cases of burials away from churchyards which are concerned with battles, epidemics, etc., but there is usually evidence of the haste and distress which accompanied their interment. There are also the bodies of executed criminals buried near the site of the gallows. Sometimes there is plain evidence of decapitation or the binding of arms behind the back. In the case of a large group of these burials found on Stockbridge Down in Hampshire it was possible to date it because one of the men hanged had been inefficiently searched and the remains of a purse were found under his armpit which contained coins dating the executions to the time of William the Conqueror. Other outlying burials are those which belong to the Society of Friends, but these are usually still marked by inscribed stones and surrounded by enclosures (stone ones in the North). The memory of them is usually preserved and they are often marked on the large-scale Ordnance Survey maps.

In England generally an unexplained group of interments may belong to Christian Anglo-Saxons or early medieval folk buried near a small church which has not survived or by one of the early cross sites which have been mentioned above. Their orderly arrangement with feet to the east will always favour this interpretation. The custom of burying objects with the dead did not end promptly with the coming of Christianity, but it is improbable that any burials made after the end of the 7th century will contain such things. A group of several hundred burials found in the parish of Weedon Lois in Northamptonshire some years ago may belong to this class. A clear case is the cemetery discovered recently inside the outer bailey of Framlingham Castle in Suffolk. This certainly would not have been placed here after the Norman Conquest and it may belong to a church demolished when Hugh Bigod commandeered the site for his castle and moved the Anglo-Saxon village of Framlingham to the neighbouring site now occupied by the little town. These burials were carefully examined and evidence was found with one of them which made a late Anglo-Saxon date almost certain.

In Scotland, Wales, the Isle of Man, and the South-west of England burials in long cists which are coffin-like arrangements of stone slabs are frequently met with. While they are widespread in the areas mentioned (Wales: Clynogfawr, Trearddur Bay, St. Justinian's Chapel near St. David's, Ynys Seiriol, Isle of Man: numerous ancient chapel or 'kecell' sites, Cornwall: Mawgan Porth, to quote a few of the more notable examples) the case of the long-cist cemeteries which mass in the Lothian district and round the coasts of Fife and Angus in Scotland is the most striking. Some of these groups of burials are

very large. There are outliers in South-west Scotland and in the Northern and Western Isles, but the concentration within twenty-five miles of Edinburgh is remarkable. These burials usually have a Christian orientation and have no obvious relation to modern communities or to churches, even when these are ancient. The only approximately dateable objects which have been found with any are some quern fragments which should be post-Roman. It has been suggested that the siting of one of these cemeteries close to the Catstane, an early Christian memorial stone at Kirkliston west of Edinburgh, provides a clue to their date.

Individual long cists can be found, and they must not be confused with those belonging to the Bronze Age which usually declare their age plainly by their contents, and there is also the ubiquitous shorter type of Bronze Age cist about which there should be no doubt. But in general long cists occur in groups, and in some cases in groups numbering hundreds. In Wales, Man, and Cornwall the association of this kind of burial with Christian sites is certain; the Scottish examples must also be mainly the burials of early Christians and may sometimes belong to those converted by St. Ninian and to their successors.

From all this it will be seen that a careful examination of the contents of these graves is most important in case any dating evidence can be found.

AUDREY HENSHALL: A long-cist cemetery at Lasswade, Midlothian, P.S.A.S., lxxxix, 1955-56, 252-283.

N. GRAY HILL: Execution cemetery at Stockbridge Down, Hants., P.H.F.C., xiv, 1938-40, 353.

G. C. DUNNING, R. E. M. WHEELER, and D. DINGWALL: A barrow at Dunstable, Bedfordshire, A. J., lxxxviii, 1931, 199-217.

Pagan and Christian religious sites

In their heathen days the Anglo-Saxons worshipped Woden, Thunor, Frig, and Tiw, and some clue is given to the location of their shrines by place names which contain the names of these gods or other elements like *hearg*, *Weoh*, and *wig* which indicate holy places and the presence of idols. Judging by the place name evidence the most popular cult was that of Woden from whom most of the kings claimed descent.

Nothing certain is known about the form of these pagan shrines in this country. Much more is known from Continental examples, and it is probable that some which formerly existed here are now beneath Christian churches. An example of this in Sweden is the great pagan shrine which has been found under the chancel of Uppsala Cathedral. In Northern Europe the major sites seem to have taken the form of buildings not unlike the stave churches surviving today in Norway which are probably a direct continuance of the old plan adapted for Christian uses. It may be that it was in a shrine of this kind that Redwald, king of East Anglia, made his notorious compromise in setting up altars to Christ and to the old gods. Edwin of Northumbria's residence at Yeavering (p. 102) has been shown to contain a number of rectangular hall-like buildings. One of these was certainly the hall proper, but there was also evidence that two of the lesser structures may have been sacred. One had a number of associated burials and was judged to be a pagan shrine, and another was thought to be a Christian chapel. On plan there was little to distinguish them from each other. Since almost all pagan shrines and early churches must have been wooden buildings with sleeper beams and large uprights air-photography holds out a fair hope of finding some of them.

There is no present evidence for the survival of the Christianity of Roman Britain in the Anglo-Saxon lands during the pagan period, and this is not altered by the fact that there may have been recognisable Christian churches still standing derelict in Kent at the end of the 6th century when Augustine arrived. Christianity departed to the Celtic lands of the West and North

where it was active and even produced its own brand of heresy. It developed a distinctive form of its own not entirely in harmony with the Latin form of Christianity currently proceeding from Rome. Celtic Christianity was vigorous in its missionary activity, and one of its principal centres was Iona which was founded by St. Columba from Ireland in A.D. 563. Although there were active missions in Scotland and on the Continent deriving from here there is no evidence that any attempt was made on the stubborn heathenism of the Anglo-Saxons before the end of the 6th century. It was the policy of Pope Gregory the Great to convert the heathen barbarians to Christianity in the Latin obedience, and it may be that the danger of the ultimate conversion of the Anglo-Saxons to the Celtic form prompted him to act. The kingdom of Kent presented an opportunity from its nearness, its relative cultural advancement, and the fact that its king Ethelbert had a Christian Frankish queen. The result was the conversion of Kent in A.D. 597 and the spread of Latin Christianity over the whole of the Anglo-Saxon lands within the following century.

No account of early Christian architecture in Britain will be attempted here. It is important to note that most really early churches were monastic in origin, and the secular church does not come in much before the 9th century. As 'minsters' these early churches served large areas, sending out priests to celebrate the Mass and perform all the other services of religion far and wide.

Early Christian monastic sites were numerous in Britain, and light has been thrown upon their details by the discovery of one at Tintagel in Cornwall, and also by the excavation of the pre-Conquest parts of the abbeys of Whitby and Glastonbury.

Early monastic sites do not show any distinctive plan, but they all, in varying degrees, are provided with some form of marked precinct boundary which amounts to a defence. This can take the form of a bank and ditch, a thick hedge, or a dry stone wall. Some early sites take advantage of older secular defences, either hill forts or, as in the case of the monasteries of St. Cybi at Holyhead and St. Fursey at Burgh Castle in Suffolk, an abandoned Roman fort. While the places of many early monastic sites are known from references to them in the lives of the saints it is rare for their sites to be precisely located. Where there is an ancient church in the place it is probable that it gives a general indication of the former monastic site.

Reference has already been made to the crosses which often marked the site of the first Christian beginnings in a district. Many stone crosses belonging to these times survive in varying states of preservation. Sometimes they were preaching crosses and sometimes they commemorated the dead. Portions of these crosses are still liable to be found, often built into later churches, while others have been put to secular uses. Any fragments of stone with pre-Conquest carving should be carefully noted and preserved, and some remarkable things have been found on garden rockeries.

It is rare indeed for there to be any surviving evidence of a wooden cross, though these must have been common once, but a large one of oak was found buried under the chancel of the little church of St. Bertolin at Stafford. No doubt this was reverently buried when it was superseded by the first church on the site.

This discussion of pagan and Christian religious sites of the early days may not seem to offer much opportunity to the ordinary field worker. As far as pagan sites are concerned place names must be a leading clue at present, but when Bede tells us that the main pagan shrine near York was at Goodmanham it is obvious that we have been warned to lose no opportunity of finding out more about it which may present itself in that village. It is the same with the early monasteries and churches. Since a great many pre-Conquest

churches must have been built of wood it is worth recalling that the greater part of a church of this type is still standing today and in use at Greensted in Essex. It is certainly unique in its survival above ground for Britain, and in the main it is little different in plan from an ancient secular hall of its period. But if any foundations of a wooden building of this general type are found by chance, the fact that there is someone nearby who knows of the possibility that it may be an ancient church can be decisive in saving some precious knowledge from oblivion.

See:

- R. L. S. BRUCE MITFORD: *Saxon Rendlesham, P.S.A.I.*, 1948. Discussion of pagan shrines, 236-241.
V. E. NASH-WILLIAMS: *The Early Christian Monuments of Wales*, Cardiff, 1950.
ADRIAN OSWALD: *The Church of St. Bertolin at Stafford and its Cross*. City of Birmingham Museum and Art Gallery publication.
SIR CHARLES PEERS and C. A. RALEGH RADFORD: *The Saxon monastery at Whitby*, Arch., lxxxix, 1943, 27-88.
SIR FRANK STENTON: *The early history of Abingdon Abbey*.
W. G. COLLINGWOOD: *Northumbrian crosses of the pre-Norman Age*.
A. W. CLAPHAM: *English Romanesque Architecture before the Conquest*, Oxford, 1930.
J. ROMILLY ALLEN and JOSEPH ANDERSON: *The early Christian monuments of Scotland*.

Memorial stones

These are the earliest large class of Christian monument in Britain and were set up to mark the graves of the dead. With few exceptions all are to be found at no great distance from the shores of the Irish Sea in South-west England, Wales, the Isle of Man, and Scotland. They are natural or, at best, roughly dressed slabs of stone bearing Latin or Irish inscriptions in uncial or ogam lettering and sometimes one stone bears the same inscription in both styles. (Ogams are a system of writing developed in Ireland which used different lengths and groupings of lines incised up the edge of a stone slab to signify different letters.) There are also a few stones with ogam inscriptions in Scotland on which the language used is Pictish.

The inscriptions seldom depart from the formula "Here lies X, the son of Y". There can be no doubt that in almost all cases they commemorate Christians and many of the stones bear a Christian symbol. Their appearance in the lands of the West begins when Roman rule broke down in Britain and their range in time is from the fifth to the seventh centuries. There were certainly many Christians in Britain in the fourth century but so far no Christian funerary inscriptions have been found and it seems clear that the appearance of so many in the West and North in the fifth century should owe little to the influence of refugees. But South Wales and Cornwall received much settlement from South-east Ireland in the late fourth and the fifth centuries and it is probable that memorial stones are an introduction from Ireland where they were already in use, complete with ogam inscriptions, in a pagan society.

The usual form of inscription in Wales and the South-west derives from that in use on the contemporary Christian grave monuments in Gaul and illustrates the connection which was maintained between that area and Western Britain in the early Dark Ages. In the South many Latin inscriptions are placed vertically on the stone in Irish style but in North Wales the more orthodox horizontal arrangement is found.

These stones may be found in very contrasting situations. Some are in churchyards or in places where early settlement might be expected while others are in lonely situations out on the moors. Of the latter it is plain that some are close to ancient routes, but most stones are now found either built into the fabric of churches or placed in churchyards for their better protection. Only a few are likely to be in their original places marking graves. They have been found in use as gate-posts or doing duty as bridges over

small streams and some still probably remain to be recognised in these situations. A few have been found in ploughing. When they are found a Latin inscription may not be too difficult to recognise, but ogams can be less easy. The presence of natural striations on stones can raise false hopes that an inscription has been found, there may be heavy weathering, and some ogams seem to have been deliberately, but not always completely, defaced in ancient times, adding further difficulty to their recognition.

See:

V. E. NASH WILLIAMS: *The early Christian monuments of Wales*. University of Wales Press, Cardiff, 1950.

H. O'N. HENCKEN: *The Archæology of Cornwall and Scilly*, Methuen, London, 1932, 221-231.

Pictish symbol stones

Although the Picts in their various political combinations were a great force in the early history of Scotland from the 5th to the 9th centuries their field archæology is meagre because as yet little can be certainly associated with them. An exception to this is the peculiar monument known as the symbol stone. These stones may be earth-fast rock-faces or boulders, but the great majority are rough free-standing pillars. They have various combinations of some seventeen symbols incised upon them. Some of these are animal forms and others are less easily interpreted, but most derive from the Mediterranean world and the Irish-Saxon art of the 7th and 8th centuries, probably through contact with Northumbria. The genius of the Pictish artists has transmuted this material into highly characteristic forms, and when once they are known it will be difficult to confuse any other carvings with them.

They have three main areas of distribution. The most southerly is in Fife and Angus and up the valleys of the Tay and Earn. The next group centres in Aberdeenshire with many in the valleys of the Dee and Don and an overspill into Moray and Speyside. The northern group begins round Loch Ness and goes right up the east coast via Golspie into Caithness and Sutherland, tailing out into the Orkneys and Shetlands. Apart from these groups there is a scatter into the Western islands, Skye, and extreme outliers at one or two places in the south and south-west far from the confines of Pictland. Besides the stones with combinations of symbols there are some which carry animal forms only like the famous series of bulls from Burghead in Moray and sundry occurrences of wolf, fish, boar, etc., all in a highly individual style. Symbols have also been found carved on the walls of caves at Covesea in Moray and Wemyss in Fife.

It is certain that more symbol stones will be found, but only by chance. Ploughing turns them up, and they may be found in use as building material. In general they occur in areas which were suitable for settled life, but their precise significance is not known though it may be suggested that the symbols are a form of heraldry. One or two seem to be associated with burials, possibly as memorials, but more light is wanted on this question. If a new symbol stone is found in the ground care should be taken to record its exact position so that the surroundings of the site can be excavated. It will probably be rare for any symbol stone to be found in its original position. They have been thrown down and moved about into churchyards, museums, and private estates but there is always the chance of finding an original site.

These symbols are not confined to boulders and rough pillars for when the Picts became Christian and began to set up a highly distinctive form of cross slab in the middle of the 8th century symbols were worked into their schemes of decoration. They continued to appear on cross slabs for more than a hundred years.

There is a remarkable collection of various carved stones of Pictish date from the neighbourhood of Meigle in Perthshire. It covers almost the whole

range of Pictish monumental art and has been arranged by the Ministry of Works in a special museum at Meigle. This should be visited by all interested in the subject.

See:

F. W. WAINWRIGHT (editor): *The Problem of the Picts*, Nelson, 1955. 'Pictish Art', by R. B. K. Stevenson, 97-128.

CHARLES THOMAS: *The Animal Art of the Scottish Iron Age and its origins*, A.J., cxviii, 1961, 14-64. (A new view of the origins of Pictish Symbols.)

Viking settlement in Great Britain

From the eighth to the eleventh centuries all parts of the British Isles were affected in varying degree by Viking raids from the Scandinavian North which were often followed by considerable settlement. In some places like Wessex independence was maintained after a hard struggle; in others like East Anglia, the Midlands, and the North of England the invaders became dominant until the area was reconquered by the successors of Alfred. There were also considerable intrusions into outlying parts of Wales like Pembrokeshire and Anglesey. The Isle of Man was taken over and in Scotland the Northern and Western islands and much of the northern coast passed under Scandinavian control which, in the case of the Orkneys and Shetlands, was to last for centuries. Cumbria also received many Norse settlers. The most obvious sign of this phase surviving today is a great number of new place names of Scandinavian origin amounting in some areas of heavy settlement in England to a total abolition of the older names. For a while Christianity and its institutions received a severe set-back.

Archaeological traces of this phase are widespread but usually amount to little more than finds of portable objects, often in graves. Recognisable settlements belonging to the newcomers are at present almost confined to the Northern Islands and Caithness, though there are various small fortified sites round the shores of the Irish Sea which can be attributed to them. The classic sites where Scandinavian longhouses and their attendant lesser structures can be seen are at Jarlshof in Shetland and Freswick in Caithness. A settlement has also been found at Broch of Gurness in Orkney and numerous graves attest a major site at Pierowall on the island of Westray. Many more must exist, but often they have been obscured by blown sand or the tumbled remains of their stone walls are not easily distinguishable from the many other similar ancient remains in those parts. All of this is well illustrated at Jarlshof. There are many viking graves scattered about in Great Britain. Often enough they must be the product of burials made during raids and other temporary occupations, but when sixty burial mounds of this period occur together as at Ingleby on the Trent below Repton we must suspect something more permanent. Some graves are under their own mounds, others are intruded into older burial mounds, and many have no mark. An interesting class is the boat graves like those found at Knoc-y-doonee in the Isle of Man, Kiloran Bay in Colonsay, and many other places in the Western Islands. These will be recognised by the presence of many iron clench nails from the decayed boats. Viking graves will be distinguished by the goods buried with the dead and both cremation and inhumation were practised. A certain number of Viking graves have been found in contemporary Christian burial grounds, particularly in the Isle of Man.

Recent work in this island has also thrown light on another facet of the Viking period. Round its coast there is a number of small fortified promontories. There are also others enclosing much larger areas, but we are not concerned with them. A good example of the small site is Vowlan Fort on the east coast a little north of Ramsey. Here the defended area was very small and had only just enough room for one longhouse. Though strongly defended on the landward side by a bank and ditch the site had no oversight of the inland area, but its command of view seawards was great, and it also

overlooked a good landing place. Excavation showed that there had been no less than six lightly constructed houses on the site in fairly quick succession. In the light of this it has been suggested that sites of this kind belong to the raiding period before settlement and that not only could such sites guard landing places during raids inland, but they could also act as recognised staging points on sea journeys. This may be giving them more weight than they really had, but we want to know more about what they really were and their location. More may be suspected on the coast of Pembrokeshire and, in fact, they may occur anywhere in the region of the Irish Sea and the Western Islands. More permanent sites in Man after the settlement may be represented by the large round and long building sites at the Braaid.

Cumberland and Westmorland received many Norse settlers as evidenced by place names, but although small finds have been made no dwelling site has yet been found. These must exist and will probably be found up on the foot-hills where they have not been disturbed by later building.

Small finds are found sporadically all over the Danish kingdom of York and in England of the Danelaw, but most of them come from graves or are examples of Scandinavian influence upon Christian monumental art. Towns like York have provided evidence of craft activities and trade. Place names remain the most consistent evidence of the extent of the settlement.

No settlement sites seem to occur in the open country and this is probably due to the fact that there was a general take-over of existing communities and estates. Place names were changed and obviously a good deal of matter extraneous to ordinary Anglo-Saxon life was brought in and made, but only a complete examination of the sites of deserted villages in the right localities by excavation will give us the details we require. Recent work at Maxey north of Peterborough among traces of long rectangular wooden houses thought to be Saxon has yielded rubbish more likely to belong to a Danish settlement of the 10th century. The best hope of finding Scandinavian settlements still recognisable by field archaeology lies in the Highland zone, and it will be obvious that the field worker who wishes to succeed will have to be familiar with the forms of the small finds likely to be found on them.

See:

- HAARON SHETELIG: *Viking Antiquities in Great Britain and Ireland*. Oslo, 1954. Part VI.
J. R. C. HAMILTON: *Excavations at Jarlshof, Shetland*. Edinburgh, 1956. H.M.S.O.
A. O. CURLE: *Excavations at Freswick, P.S.A.S.*, 1934-35; 1938-39.
P. M. C. KERMODE: *Ship-burial in the Isle of Man (Knoc-y-doonee)*. *Ants. J.*, x, 1930. 126-133.
GERHARD BERSU: *A promontory fort on the shore of Ramsey Bay*. *Ants. J.*, xxix, 1949. 62-79. (Vowlan Fort).

Viking defensive works in England

The early Viking forays against England were usually seasonal affairs from which the raiders returned home for the winter, but after a while it became common for them to over-winter in this country by seeking out a good defensive position either on the sea coast or on a river. The first recorded case of this was in the Isle of Thanet in A.D. 850-1. There is good historical evidence for the location of some of these sites, but very little obvious trace of them has survived, though the subject has not received the attention it deserves from field workers.

The earthwork at Shoeburyness in Essex has disappeared under modern military establishments, and Guthrum's winter camp at the Forbury in Reading at the confluence of the Kennet and the Thames is covered by railways and a gas works. The possible Danish dockyard and harbouring place at Willington on the Ouse below Bedford has also been ruined by a railway station and goods yard, while nothing has been noted of the fort at Chippenham in Wilt-

shire to which Guthrum retreated after his defeat by Alfred at Edington in A.D. 878. Castle Rough on the Swale near Sittingbourne may also be a wintering place.

In the last fifty years knowledge of contemporary defensive works in Denmark and other parts of the Viking homelands has advanced rapidly since the excavation of the fortified trading post at Hedeby near Schleswig, the study of the linear defence across Southern Jutland known as the Dannewerk, and the discovery and thorough examination of the fortified training base at Trelleborg in Zealand. It now appears that the final conquest of England by Sweyn Forkbeard between A.D. 1003 and 1014 was carefully prepared for, and Trelleborg is now only one, and by no means the largest, of these bases in Denmark. All of these sites are laid out with considerable skill and should be recognisable, though they are hardly likely to exist on this side of the North Sea. For a while it seemed possible that the very perfect circular earthwork at Warham in Norfolk might be something of the same kind, but excavation has now placed this firmly in the Iron Age.

Overwintering sites may not have had very strong defences since they made use of natural obstacles and did not look far beyond the needs of a season. They were incidents in a series of campaigns and a search for them must go hand in hand with the historical evidence, which is considerable. The whole of the river system running into the Humber, the Wash, and the Thames is the main field of enquiry.

There are many places where Danish armies are known to have harboured and built defences. This list includes Torksey and Repton on the Trent, Fulham, Rochester, Milton by Sittingbourne, Benfleet, Shoeburyness, and the islands of Mersea, Sheppey, and Thanet on the lower Thames and its estuary, Tempsford and Willington on the Great Ouse, Buttington and Quatford on the Severn, and Appledore on the Rother in East Sussex. Clues to these may be the finding of weapons of Danish type in the beds of rivers. Sometimes these may only mark the sites of battles like the weapons found in the bed of the Thames on the downstream side of Old London Bridge which are possibly the relics of Olaf Tryggvason's attack on the bridge in A.D. 994. At Benfleet at the head of the creek on the north side of Canvey Island the storming of the Danish fort there in A.D. 893 may account for the remains of burnt boats found during railway construction. It is also possible that a cemetery may be found which was connected with one of these camps. The only known example in England is in Foremark Wood downstream from Repton on the banks of the Trent. Here there is a considerable group of burial mounds whose contents have shown that they are probably referable to the harbouring of the Danish army at Repton in the winter of A.D. 873-4 when the kingdom of Mercia was finally subdued. Early in this century a Viking boat burial was also found during the construction of one of the reservoirs in the Lee Valley north-east of London, but although there seems to be no doubt about the fact, it was not properly observed at the time.

See:

PAUL NORLAND: *Trelleborg, Nordiske Fortidsminder*, Copenhagen, 1948.

J. F. DYER: *Danish earthworks*, *Bedfordshire Magazine*, Vol. 8, 1962, 235-240.

A.D. 1066 TO MODERN TIMES

General

The scope of field archaeology relating to the Middle Ages has been greatly extended in recent years. The interest which was once largely confined to religious and secular buildings and their adjuncts has been widened to include the medieval village with land tenure in all its physical aspects, the early development of the castle in its earthwork and timber phase, the moated

homestead, a closer study of medieval pottery types, building materials and their sources, foreign imports, etc. The principles involved here are precisely those which help to enlighten prehistoric and Roman times, and the date 1066, which has exercised a certain baleful influence in times past, has no relevance in archaeology. The only new factor is the existence of documents which can help the interpretation of what is observed on the ground.

Attention was first drawn to the need for study of the visible remains of medieval villages by Canon C. W. Foster nearly fifty years ago, but little was done until the subject was taken in hand by Professor M. Beresford. This led to the founding of the Deserted Medieval Village Research Group which has already done much to draw information together on a national scale by work in records, field examination, and excavation. A fresh impetus has also been given to the new look in medieval archaeology by the founding of a national society for its promotion. The school of local historians headed by W. G. Hoskins and H. P. R. Finberg has also given us a better understanding of the surviving traces of medieval country life by a closer integration of documentary and field study.

Nor have these developments ended with the Middle Ages. Increasing attention has been paid to the criteria for dating early modern sites by the study of such indices as the developing form and the makers' marks of the clay tobacco pipe. This is one of the fruits of the increased study of town sites made possible by war damage. Last of all, the sudden spurt of new techniques in engineering, manufacturing, and transport which now requires so much renovation of the older industrial scene has brought a tardy realisation of the need to attend to the field and preservation sides of the earlier features of the Industrial Revolution before they are all swept away.

We have advanced a long way from field archaeology as practised by our grandparents.

See:

M. W. BERESFORD and J. K. S. ST. JOSEPH: *Medieval England, an aerial survey.* Cambridge, 1958.

Castle mounds

The Norman invasion of A.D. 1066 was the cause of the widespread introduction of a new type of fortification, the castle mound with or without bailey. The typical castle mound consists of a round, steep-sided, flat-topped earthen mound surrounded by a large ditch and in most cases it overlooks one or more embanked courtyards called baileys. Many variations of this plan occur . . . the norm is a mound and one bailey . . . but for further information on this point reference must be made to books. It must also be emphasised that many of these sites can be very small.

Castles of this type were already becoming common on the other side of the Channel at the time of the Conquest. It is uncertain whether any existed in England before 1066 but, if so, they were very few in number, and were regarded by the inhabitants as an objectionable novelty. With the possible exception of Clavering Castle in Essex, the only other candidates for this period are Ewyas Harold, Richard's Castle, and Hereford, all in Herefordshire. They were the work of Normans who came to England under the patronage of Edward the Confessor.

As soon as William was safely on the throne and the new land settlement had got under way castles of this early type were quickly built in many places. Their sites were not always of much permanent defensive value, and many must have been little better than blockhouses run up to gain a measure of security while the local situation was being considered by a new owner. Few of those built soon after 1066 have any known history, though later some became well-known through being developed into the great stone castles of

the 12th and 13th centuries. The early 'motte and bailey' castles are specially numerous in the Welsh Marches where they are the product of the constant struggle between the Welsh and the Marcher lords. In the course of time the Anglo-Scottish border also came to contain a great many small defences, though here the common type was known as a *pele*, a small stronghold consisting of little more than a strong tower with no living accommodation on the ground floor, and generally without the earthwork features normal in the south.

Early castles are generally placed near some important road (often a Roman road) or at fords, passes, and other crucial points. The Norman kings, taught by bitter experience in Normandy, kept a jealous eye on all castle building. They secured themselves by building powerful royal castles and saw to it that many of those which remained in the hands of great feudal lords were held for the king. Already before the death of Henry I in 1135 the resistance of rebellious barons behind strong walls had caused much trouble, and the general collapse of central control during the civil war between Stephen and the Empress Matilda led to an outbreak of illicit castle building. The minor strongholds which now sprang up were known as 'adulterine castles', and it was one of the first tasks of Henry II in restoring order to reduce and destroy them. The comparative ease with which he did this is evidence of their temporary nature. Thereafter the situation was never again allowed to get out of hand, and by degrees all castles of any importance passed into royal control.

Today it is practically impossible to distinguish between the sites of the earlier minor castles and those of the Anarchy without excavation. Some which are mentioned in history like that built at Faringdon by Robert of Gloucester have been found by excavation, and there are a number in Essex, Cambridgeshire, and Hertfordshire associated with one of the leading anarchs, Geoffrey de Mandeville, which can be recognised, though their traces are usually slight. An example is at South Mimms close to the Barnet by-pass road.

The mound of the early motte and bailey castle was usually surmounted by a wooden tower, though this was sometimes replaced in stone when the ground had consolidated sufficiently to take its weight. Examples of these wooden 'bretasches' may be seen depicted on the Bayeux Tapestry, and it is probable that the main timbers supporting them were carried right down into the solid ground under the earthen motte. Thus their construction preceded the casting up of the mound, and this method was dictated by the speed with which they were required, it being impossible to wait for the mound materials to consolidate enough to take the load by themselves without slipping. A strong wooden palisade surrounded the top of the mound, and it is probable that there was a clear space inside it except for the heavy timbers supporting the tower, whose first floor began slightly above the top of the palisade.

The tops of some mottes are so small that no other arrangement seems possible if there was to be easy movement round the inside of the palisade. These points were clearly illustrated by Mr. Brian Hope Taylor's excavation of the small motte at Abinger in Surrey. Access to the top of the motte was by a removable wooden bridge whose abutments can usually be found by excavation. The strength of the defences given to the bailey varied, but most of the accommodation and stabling must have been there. Water supply often depended on a well, but on the motte itself reliance was probably placed on rain water.

Excavation on a site known as the Husterknupp in the Erft valley near München Gladbach in Western Germany has shown the progressive development of a local Frankish nobleman's timber hall surrounded by a stockade and

a wet ditch into a motte and bailey by the raising of the main dwelling site on to a mound which was increased in size and height more than once, and so became a motte.

Where possible English mottes and baileys had wet ditches, but sometimes they had to rely on the sheer size of a dry ditch. The great Norman castle mound at Thetford in Norfolk is a good example. This is an early piece of work in the best style which took some advantage from the already existing earthworks of an Iron Age fort. The motte is eighty feet high but little is known about its history. It was presumably the castle recorded as having been destroyed at Thetford in 1172 and there is no obvious evidence that it was ever remodelled into a stone castle.

Castle mounds of this kind ceased to be built after the 12th century and were superseded by fortified manor houses, a development of the moated homestead.

There are still a number of small castle mounds to be recognised. Owing to their size such mounds are usually marked on the map, but they are sometimes incorrectly described there as 'tumuli'. The siting of some castle mounds is often in the middle of the village and surprisingly close to the church. In fact it can be difficult to distinguish large tumuli (burial mounds) from castle mounds. The presence of a bailey, or of some remains of it, is of course conclusive, and this is the first thing to be looked for. On the other hand some castle mounds, especially in Wales, never had baileys, so that the absence of a bailey proves nothing. If it is a castle mound there must have been some way of approach; signs of this . . . a hollow track, or a terrace on a hillside . . . should be looked for. If near a spring or river, signs of hollow tracks may be visible leading down to the water. The top of the mound is normally flat unless it has been later disturbed; if in stony country the keep was probably of stone, and remains of masonry may be visible round the edge of the platform. There is often traditional evidence of value, such as the name of the field or wood in which it stands; when the name "castle" is found close to the site it may be considered that the mound is not a 'tumulus'.

In Scotland castle mounds were formerly called 'motes' on Ordnance Survey maps, but the term is no longer used unless it is part of a proper name. Encouraged by the House of Canmore, Norman influence pervaded Scotland as well as England and mottes are numerous, especially in Galloway, Moray, and Aberdeenshire. Many Scottish examples are up to the best English standards, but there are others which are less satisfactory and may produce problems for the field worker. There are many morainic mounds in Scotland which look deceptively artificial and identifications should be made with caution. Genuine mottes are sometimes contrived out of these natural mounds and scarping can sometimes be detected which has been done to increase the steepness of the natural slope, but some experience is required to sort out the true from the false.

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G. C. DUNNING: Alstoe Mount, Burley, Rutland, *Ants. J.*, 1936, xvi, 396-411.
T. C. LETHBRIDGE: Excavations at Burwell Castle, Cambridgeshire, *C.A.S.*, 1936, xxxvi, 109-120.

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 E. M. JOPE and R. I. THRELFALL: The twelfth century castle at Ascot Doilly, Oxfordshire, *Ants. J.*, 1959, xxxix, 219-273.
 M. W. THOMPSON: The excavation of the fortified medieval hall of Hutton Colswain near Malton, Yorkshire, *A.J.*, 1957, cxiv, 69-91.
 A. HERRNBRODT: Der Husterknupp, eine niedererrhenische Burganlage des frühen Mittelalters, Beiheft 6 der Bonner Jahrbuch, 1958.
 SIDNEY TOY: The Castles of Great Britain. Heinemann, London, 1953.

Moated homesteads

One of the commonest antiquities to be seen on Ordnance Survey maps in England is the moat. A well-preserved example will consist of a broad wet ditch large enough to be a serious obstacle surrounding a (generally) rectangular area which varies in size but averages out at about 200 feet by 250 feet. It may still be occupied by a house, often of considerable age and interest, but many of these sites have long been deserted. They may be sited out in the open country or in villages, though in the latter case their moats have often been more or less filled up and they may not be easy to recognise. Those in the open country often carry spinneys or clumps of trees with much undergrowth which does not make their examination easy. In some cases there is a complex of two or even three conjoined moats. The principal one which carried the dwelling house has often had its enclosed area raised by several feet to improve drainage. Subsidiary moats enclosed farm buildings, stables, stockyards, ricks, gardens, orchards, etc.

Locally the distribution of moated sites can be very dense and it is greatest in Essex, Suffolk, and Cambridgeshire. Another prolific area is in the West Midlands. Lincolnshire and the East Riding of Yorkshire are also well supplied in places, but Wessex, the South-west, and the North of England generally contain few. Most moated sites are found in comparatively low situations on heavy soils, though there are exceptions to this in the West and North. Since it was necessary for them to have a reasonably good water supply for domestic purposes as well as to keep the moat full they are often sited in relation to a spring or where it has been possible to divert water from a stream.

The large scale Ordnance Survey maps still do not show all moated sites but an attempt is being made to remedy this as far as possible in the present revision. But the former existence of these sites can often be deduced from the maps even when they have not been recognised and described as such. Old dog-leg fragments of wet ditch can be seen, often associated with copses, and a visit to the spot will show the much filled-in continuation of the moat which is now too shallow to hold water and too slight to have been noticed by the earlier surveyors. Field names and the names of woods and copses can also help with identification, for the name of a site recorded in early documents can often persist even though its form may have undergone alteration. An example of this is the moat now called Lordship Close at Wendy in Cambridgeshire. On the Tithe Map dated 1850 this was known as Gammon's Grove and it was the site of a manor belonging to the Gambon family from 1360 to 1440. On tithe maps and old estate maps the name 'moot', as it is often spelt there, probably refers to the site as a moated homestead. Where moats have been completely filled in and ploughed over they readily show on air-photographs because of the depth of soil in the wide buried ditches.

It is rare to find any traces of buildings surviving on moated sites which are no longer in active occupation. Most of these sites are outside the areas where stone was readily available and the houses which occupied them were liable to be of various forms of timber and half-timber construction. When ruined these leave little more than post holes and sleeper beam trenches which can only be found by excavation. On most sites, however, there is likely to have been a greater or lesser amount of hard standing in the form of cobbled

or gravelled surfaces belonging to yards, drives, etc. Disturbances of the enclosed area will often show these where nothing else appears. The sites of some of them were also strengthened by timber stockades and heavy fences, while timber bridges gave access across the moats. Sometimes the water defence is unusually strong as at Kirtling in Cambridgeshire where we learn that a fortified house (*forcelletum*) belonging to the de la Zouche family at the end of the 14th century was inclosed 'with ditch and pales', and remains of these pales have been found in the bank on the west side of the moat. It is therefore not always easy to distinguish between a minor stronghold and a moated homestead.

In default of excavation there is little direct evidence of the date at which any moated homestead was constructed. The relation of the larger concentrations to areas of natural woodland and waste suggests that they belong to a process of colonisation and the comparatively few sites which have been excavated bear this out. For instance the unusual concentration in and round Warwickshire seems to be connected with the Forest of Arden. Moated sites can vary a good deal in plan and it has been claimed that oval examples can ante-date the Norman Conquest, but while this is quite probable it is a point which has not yet been conclusively shown by excavation. Our knowledge of Late Saxon and Saxo-Norman pottery should help there. In one or two cases like Southoe Manor in Huntingdonshire and Flambard's Manor in Cambridgeshire it is plain that the ground was occupied at this time, but it is not quite clear that the pre-Conquest material found was co-eval with the moated phase of the site. On the other hand there is good evidence for dating the beginning of many sites to the 13th century, if not earlier. Even where buildings were of wood it seems that they often had tiled roofs as a precaution against fire, and tiles are often to be seen on the sites. There is large scope for field work here.

The moat served a number of purposes. It played some part in draining the site of the house, it acted as a defence against men and animals and it provided a handy fish-pond at a time when fish was an important fresh food item in winter. The subsidiary moats and embankments which can sometimes be traced for a considerable distance from the house-place reflect the conditions of rural life when much of the surrounding country was in a state of nature with woodland, heath and moor close by. Crops and gardens were liable to damage from deer and swine, while cattle and sheep needed protection from wolves in the remoter places. A high bank and ditch surmounted by a live hedge or pale (*fossa cum haia viva seu mortua*) was required for this purpose, but the royal interest in deer ordained that such 'closes' (*clausa*) should not be made without special licence, under penalty of a heavy fine. Records of such fines are still extant and very numerous.

A happy combination of the use of surviving documentary material relating to a moated site combined with skilful excavation can tell a very complete story about its character and fortunes. An example of this was the excavation of the site known as 'The Mounts', the old manor of Pachenesham Magna near Leatherhead in Surrey. Here it was possible to trace the various tenancies and rebuildings of a house from the 13th to the beginning of the 15th century, when the site was abandoned. The changes of plan made by various known personalities could be seen and the quality of the building assessed. This was no very notable building, but it was shown to have had its own fairly well surfaced approach road coming for some distance from the old Kingston-Leatherhead highway. Tiles were used to roof this building as early as the 13th century even though the main structure was of half timber. Such tiles, along with pottery, are often the main surviving evidence of human occupation. The contents of rubbish pits can be informative on the subject of diet. The remains of various sea fish (presumably salted) can often be

found on sites far from the sea, and there can also be a surprising variety of traces of vegetable food.

See:

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A. W. G. LOWTHER: 'The Mounts', Patchesham Park, near Leatherhead. *Proceedings of the Leatherhead and District Local History Society*, i, No. 1, 1947, 6-11; i, No. 2, 1948, 5-10.
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Deserted town and village sites

After a long period of neglect the study of the sites of deserted communities has been taken up with vigour. These places can range from the site of a new town which failed to flourish down to a small group of farmsteads which have gone back to the waste. Most of these examples belong to the Middle Ages, and these failures tend to come in waves at different times for different historic and climatic reasons. The erosion of the sea or the blowing of sands has claimed some victims like Dunwich in Suffolk or Kenfig in Glamorgan, but for obvious reasons most of these are archaeologically a dead loss.

In order of time the main factors in decay and depopulation can be given as follows:—

11th century	Creation of royal forests, and harryings like that of William I in the North.
12th century	Deliberate removal of villages by the Cistercian order.
14th century	Climatic deterioration leading to the abandonment of marginal sites. Wars with the Scots and Welsh. The Black Death. Disasters of the Hundred Years' War. The failure of deliberate attempts to create new towns.
15th and early 16th centuries	Enclosures for sheep farming.
17th and 18th centuries	Re-siting of villages away from great houses.

Failures were not always complete. A village could be greatly reduced but not vanish, and new towns like Winchelsea or the Newtowns on Poole Harbour and the Solent could decline to a straggling village or be a complete failure almost from the beginning.

There is little accurate information about the 11th century depopulations. William I's military activities created much havoc locally and his policy of game preservation certainly hit the New Forest area hard, though it can never have been very populous. In the 12th century we are on firmer ground with the well-recorded acts of the Cistercian Order who removed villages from the neighbourhood of their new monasteries in accordance with the requirements of their rule. The villages were refounded elsewhere. The period between the 11th and the end of the 13th centuries was one of notable expansion with the climate favouring new enterprises like the breaking up of the waste, the increase in the area of arable land, and other forms of colonisation. But after the opening of the 14th century a number of factors combined to bring on a set-back. The weather became much wetter; harvests failed and many new intakes were abandoned as unworkable. In mid-century came the great disaster of the Black Death which wiped out at least a quarter of the

population, and the North of England suffered from destructive Scottish raids before 1350. A lesser evil was the damage caused along the south coast by French and Castilian raids during the Hundred Years War, and at the beginning of the 15th century there were local devastations along the Welsh Marches due to the war with Owen Glendower.

The difficulties of the 14th century produced a complex period of economic difficulty and social change. Before the Black Death in 1349-50 the rigid pattern of rural society with its open fields, common pastures, villein tenures, and other features of serfdom was already showing signs of change. Men were beginning to accumulate enclosed holdings of land isolated from the common fields, and some landowners were already experimenting with better ways of getting the most out of their property. The Black Death gave a violent shock to the stability of medieval society, placing a premium on labour and making arable farming difficult at a time when wool had become an important export. Landowners, tempted by the high price of wool on the one hand, and by the labour shortage on the other, began to lay great areas of arable land down to grass. This practice became widespread in many Midland counties, particularly Warwickshire, Leicestershire, Oxfordshire, and Buckinghamshire, though these were only the areas of greatest disturbance, and there was much depopulation in East Yorkshire. Where many men had laboured only a few shepherds now followed their flocks. The result of this and other lesser causes has been to create at least 2,000 sites of vanished or diminished villages and hamlets in England. Less is known about Wales, but sites of this kind occur there also. Only determined intervention by the Tudor central government ended this phase in the 16th century.

Some late removals of villages were carried out by great landowners in the late 17th and 18th centuries when they wished to remove them further away from their residences. As a result it is often possible to see the old village sites clearly in the parks created round these houses, a good example being Burton Constable in Yorkshire. These removals have little archaeological importance for us today, but the planning to which the newly-sited villages were subjected can have interesting results. A famous example of this is the village of Milton Abbas in Dorset.

Many deserted villages have never been under the plough, and today they are often represented by rough pieces of pasture surviving among arable land. Severe depopulation coincides with a period when documents bearing on the fortunes of villages become numerous, and the study of these is important in identifying deserted sites. The Ordnance Survey maps also provide many clues before any actual inspection is made of the ground. One is the frequent survival of parochial areas which contain no village, but still retain boundaries and a name. These are almost infallible signs of lost villages.

On the ground it is often possible to trace the course of the old village lanes and to see the outlines of the old house places, gardens, orchards, and crofts as low embankments. The houses are not likely to have left much trace for they were frequently built of nothing more lasting than wood, wattle, daub, and thatch, and even when stone was used much of it will probably have been looted for use elsewhere.

Occasionally, however, where stone has been used extensively for houses and closes the site of a village may survive in astonishing completeness as at Gainsthorpe in North Lincolnshire. The large scale Ordnance map covering a site may not show more than the most obvious irregularities of the ground, but it is usually informative about water features like old fish ponds and mill dams which may survive. A group of these may often be the only clue shown on the older maps. Sometimes the old church place may be seen, and the local system of tracks often preserves the line of the old roads joining the deserted

site to other villages. The site may still be called 'Town Field', and a neighbouring farm may bear the name of the village.

There are many degrees between total desertion and some measure of decline. A modern village may be flourishing, but still show some signs of deserted sites round its edges. Again, a site may consist of a large farm or manor house with many old closes scattered round close by. A church, either ruined or quite isolated from other dwellings, may also be the last phase in some places. There are many variations on this theme.

Where the village site has been ploughed out its details will often appear on air-photographs, and the understanding of an untouched site will be much increased by this means. In the present general revision of maps care is being taken to survey all details which are plainly recognisable, and also to name the site.

Until recently the effort required to level the sites of deserted villages was uneconomic and they were left to rough grazing, but today's heavy earth-moving machinery makes short work of them, and their identification is becoming a matter of urgency before most of them are destroyed.

It is obvious that great archaeological importance attaches to the sites which were completely abandoned at a known date like the villages removed by the Cistercians, for material found in these is unlikely to be younger than the time of desertion. It is thus possible to get a firm date for types of pottery and other finds which may help with other sites. Excavation of deserted medieval villages may also lead to more information about the earliest Anglo-Saxon settlements which should lie under some of them. Much that is quite unsuspected may be concealed in one of these sites, as the excavations at Wharram Percy in East Yorkshire continue to show.

The following books and articles may be consulted:—

JOHN ROUS: *Historia Regum Angliae*, ed. Thomas Hearne, Oxford, 1745. A contemporary account of depopulation in Warwickshire.

W. G. HOSKINS: *Lost villages in Leicestershire*, T.L.H.S., 1944-45, xxii, part iv.

R. L. S. BRUCE MITFORD: *Account of the excavation of the site of Seacourt*, Oxon., 1940, v, 31.

W. M. PALMER: *A history of Clopton*, Cambridgeshire, C.A.S., xxxiii, 3-60. The historical background of a vanished village.

M. W. BERESFORD: *The lost villages of England*, Lutterworth Press, London, 1954.

The deserted villages and crofts of Scotland

In referring above to deserted village sites no mention was made of the case of Scotland.

While similar conditions to those in England operated to bring about desertions in the Lowland areas of Scotland, and some work has been done on the matter, the largest region affected lies in the Highlands and Islands. This is a more recent affair. Today the virtual collapse of rural life in many of the remoter places presents grave social problems. Under present conditions the flight of younger people southwards to the towns and industrial areas is difficult to stem, much more to reverse, but the process of depopulating the Highlands began more than two hundred years ago with the end of the old way of life following the collapse of the second Jacobite rebellion in 1746.

There is no space here to rehearse the various factors which have led to the emptying of the Highlands. Apart from the actual hardships of life in the region and the lure of emigration overseas there has been the deliberate action of Scottish landlords to displace people following the old traditional way of life and to substitute a more profitable way of exploiting the land. The most notorious example of this was the depopulation of the greater part of Sutherland by Patrick Sellar in 1819-21, acting as agent for the Duke of Sutherland. This was a belated version of the urge to adopt sheep-farming

in agriculturally difficult land which had been the cause of so much trouble in England in the 15th century. This particular depopulation was carried on with great determination and brutality, and before the middle of the century it had been matched in many other places. Already before this time many had left the Western Islands for Canada, and at late as the 1880s the 'Crofters' Wars' accompanied evictions in Skye and elsewhere, leading to a disastrous decline in population.

The importance of this for the field worker is that the ruins of the old crofts still survive in many places along with the other features associated with them like their corn-drying kilns and the stone dykes which show the former limits of the cultivated land painfully wrested from the moor. While the most obvious ruins are those of the latest dwellings on the various sites, an examination of places like Rosail, Truderscaig, and Grummore in Sutherland, now quite deserted, will show the long continuance of life as shown by the presence of earth-houses and brochs. In these cases it is plain to see that there has been settled life for at least two thousand years.

There is need today for the identification, study, and recording of these places. The present visible remains may not be more than one, or at the most, two centuries old, but they represent an extinct way of life and are as much archaeology as Nineveh or Tyre.

The current 6 inch resurvey programme of the Ordnance Survey which is producing a more accurate contoured map of these highland regions is trying to depict as many of these remains of the old life pattern as possible, but the work of making a complete study of them is more than the present resources of the Archaeology Division will permit. A good many of them are already on the old 6 inch map series, but their detail is often incomplete. Some of the sites lie far from modern routes because the pattern of tracks joining them was completely disrupted when they were abandoned, and a new pattern of roads was introduced.

It is common for these old settlements to proclaim themselves by rough grass vegetation contrasting with the normal heather, bracken, and dwarf willow cover of the open moorland. These grassy areas are often surrounded by an old stone boundary dyke. Evidence of ancient cultivation is the occurrence of numerous small cairns of stones which are often masked by peat and vegetation. These have been gathered to clear the ground and their recognition is sometimes complicated by the presence of superficially similar low mounds which prove on examination to be the remains of old peat stacks which have been cut, piled, but never removed. But these features almost certainly belong to the earlier Iron Age phase of these settlements whose more recent agriculture prior to the depopulation was by rig and furrow, clear traces of which may often be recognised.

In these remote places the agents of destruction which cause so much damage and loss in the South are seldom active so that most of the sites are in no immediate danger. After the elements their chief enemy is the Forestry Commission. The tearing up of the surface by heavy machinery as a preliminary to tree planting does much damage, and when the plantations have grown they make the task of finding such settlements as still survive within them almost impossible.

See:

A. MACKENZIE: *A History of the Highland Clearances*, Inverness, 1883.
IAN GRIMBLE: *The Trial of Patrick Sellar*.

Welsh platform houses

A type of site known as the platform house has now been recognised in most parts of Wales. At present the largest number seem to be in the north of

the country. Their full range in date is not yet certainly established but the present evidence shows that they were in full occupation during the Middle Ages.

These house sites are usually found near the better agricultural ground and not so high in the hills as some other early settlements. The prime feature is a levelled rectangular area cut into the slope of the ground and some of the excavated material has been arranged as a curved protective embankment or 'hood' round the top of the scarp cut into the hillside at the upper end. This platform carries traces of buildings and enclosures. The buildings usually have a long rectangular form but the plan of some may vary from this. There is a fairly large associated enclosure or compound surrounded by an earth bank and not far away there are often signs of old cultivations. These sites can occur singly or in groups and they have often suffered damage by being converted into sheepfolds of more recent date. A limited number have a size and complexity which suggest that they were the homes of local leaders.

They are not uncommon in South Wales, but here some are set high in lonely, steep and inhospitable places so that it is not always easy to imagine what sort of life the people lived who dwelt in them. Much more work will have to be done to get a better knowledge of these sites all over Wales. Some appear to belong to the period before A.D. 1400 and they have been interpreted as the homes of the free Welsh tribesmen.

See:

C. A. GRESHAM: Platform houses in North-west Wales. *Arch. Camb.*, ciii, 1954, 131-136.

C. and A. FOX: Forts and farms on Margam Mountain, Glamorgan. *Ant.*, viii, 1934, 395-413.

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Medieval monasteries

There is usually very little doubt about the siting of the more important monastic houses. Although many were largely pulled down by their new owners soon after the Dissolution their remains are often still considerable. Monasteries which stood in or near towns have often been pillaged of all their materials above ground. Good examples of this almost total destruction are the Thames valley abbeys of Abingdon, Reading, and Chertsey. An important house in the depths of the country like Sempringham, the mother house of the Gilbertine Order, has also disappeared so completely that its site has had to be re-established by air-photography, but the measure of destruction varies from place to place. Fragments of the smaller houses are often incorporated in farm buildings, and it is rare for the fishponds and outer enclosures connected with the secular buildings to be untraceable on the ground.

There has been some confusion between monasteries proper and their granges and other small dependent houses. As great landlords it was common for monasteries to have farms where lay brothers or other agents administered lands and collected rents. Some of these had important buildings and where they have survived some of them have been dignified with the description 'Abbey' or 'Priory' on older editions of Ordnance Surveys maps, but these errors are being corrected as revision proceeds. The whole of the topography of monastic houses in Britain between 1066 and 1539 has been dealt with authoritatively on the second edition of the Ordnance Survey map of Monastic Britain.

A good example of a monastic house which has been used as a secular dwelling is Lacock Abbey in Wiltshire where most of the structure is intact except for the church, which has been entirely destroyed. A lesser example of the same use is Denny Abbey in Cambridgeshire where the farmhouse is contrived out of considerable remains of a late Romanesque church, and some of the other buildings have been put to farm purposes.

Monks were often energetic landlords, especially in the 12th and 13th centuries. They made mill ponds and fishponds, smelted iron, diverted streams to supply their houses, and developed their properties in many ways which still appear. Some notable barns survive, and there is also ample evidence of gardens, orchards, and even vineyards.

The re-discovery of any lost monastic sites, and the working out of the site details of those already known will always require the use of air-photographs taken under conditions of drought. Unless the site has been very completely robbed of its wall-footings, or the overburden of soil is very thick, the lost features will declare themselves.

The following may be consulted:—

- A. HAMILTON THOMPSON: *English Monasteries*, Cambridge University Press, 1913.
DOM GUGAUD: *Christianity in Celtic lands*, 1932.
DOM DAVID KNOWLES: *The Monastic Order in England*, 1940.
———: *The Religious Houses of Medieval England*, 1940, with revision in the *English Historical Review*, September, 1945.
——— and J. K. S. ST. JOSEPH: *Monastic sites from the Air*, Cambridge, 1952.
——— and R. N. HADCOCK: *Medieval Religious Houses; England and Wales*, London, 1953.
Map of Monastic Britain, two sheets, north and south, 2nd edition Ordnance Survey, 1954-55. Price: paper flat 3/- per sheet, mounted and folded 9/- per sheet.

Medieval enclosure banks

Many earthworks have been mistaken for prehistoric entrenchments which are really of medieval origin. During the Middle Ages a great many banks and ditches of varying size were thrown up round parks, woods, fields, and smaller enclosures. These, which are amongst the youngest earthworks met with by the field archaeologist, may be recognised by three main characteristics:—

1. The bank has less spread and its sides have a steeper slope; in consequence the ditch is less deeply silted up than in older examples.

2. In following its course across country on the map it will be observed that a medieval enclosure bank usually respects the older modern field boundaries. It is part and parcel of the same system and, except where the face of the land has changed completely in the last hundred years, a medieval bank is usually also a field boundary for a good part of its course.

3. Old trees may frequently be observed growing on the bank.

The age of these banks is, however, not necessarily a matter of opinion. Documentary records exist in most cases of the enclosure of a park, wood, purpresture, or assart. These records expressly mention the construction of a limiting bank and hedge or pale (see also *Moated Homesteads* p. 125). In a few rare instances where contemporary perambulations of such enclosures were made and written down, a further proof of age is provided (e.g. the park at Brewham, Somerset: bounds in *Cal. Inq. Misc.* I, p. 36, A.D. 1243). Generally speaking it may be said that the majority of the large deciduous woods of the south of England existed in much their present shape at least as early as the 13th century. In two instances it can be proved that the woods in question (Boreham and Southgrove, outliers of Savernake Forest) are today exactly the same size as when they were perambulated in A.D. 1330. Most of this medieval construction of earthworks took place in the 13th century.

The following may be consulted:—

- O. G. S. CRAWFORD: *Archæology in the Field*, 189-197.

Medieval industrial sites

These will be dealt with under a succession of heads.

Mining and smelting

The leading metallurgical sites were those for the smelting of iron in the Weald of Kent and Sussex and in the Forest of Dean. These were not the only areas worked extensively for iron before 1700, but they predominated, as they had done since late Prehistoric times, because of the convenient conjunction of iron ore with supplies of charcoal from extensive woodlands. These were to be exhausted in time, but in the Middle Ages and early modern times the industry was active here and producing many large deposits of ash and slag. These have been much reduced by their use as road metal by local road overseers before the motor age, and they can be dated only by the associated pottery and other rubbish left behind by the iron workers. Major relics of this industry in the south are the many dams built to create heads of water . . . 'hammer ponds' . . . which drove batteries of trip hammers by water-wheels for forging the iron. In the South-east the leading sites belonging to the iron industry are fairly well known, and it is probable that only lesser ones remain to be found. But in other areas of early iron working like Cumberland there is probably much still to be done.

Among other metals those mined and worked in Britain continued to be chiefly tin, lead, silver, copper, and zinc in the form of its carbonate, calamine.

Tin was got both by streaming and mining in the South-west, and the records of the Stannary Courts tell us a lot about this, though the actual work has not left much trace on the ground. Relics of tin production are the small structures built of heavy stones and known as 'blowing houses' in which tin was smelted.

The lead mining areas of Great Britain have been worked at all times down to the later 19th century when the competition of more cheaply produced foreign lead, rather than the exhaustion of the ore, stopped production. This makes it difficult to assign any particular lead working to any period before modern times. There are clearly-surviving Roman lead-mining sites on the Mendips, and records of others of later dates are not wanting, but often a confused effect has been produced on the ground because it has been turned over more and more drastically by successive bands of miners. The facts on the ground must usually be considered in the light of the many estate and other records of lead mining.

Silver, besides being regularly produced with lead, was also mined in considerable quantities in the 14th century at Bere Alston in the lower Tamar valley, and much was also produced at Combe Martin in North Devon. Its production in large quantities at the lead mines near Aberystwyth in the early 17th century was an important resource for Charles I's shaky finances.

Coal mining did not begin on a large scale till the 17th century but it was dug locally where it occurred near the surface. When the outcrops began to fail it was extracted by systems of bell-shaped pits set as close together as possible, and forgotten systems of these dating back to the Middle Ages have sometimes caused much disappointment to modern open-cast miners. These pits are sometimes seen on air-photographs, and some moorland areas are full of them.

Copper was also produced in moderate quantity, and the early brass industry at Bristol was maintained by the zinc carbonate mined in the Western Mendips at Rowberrow.

A good idea of the general practice of mining on the Continent in the 15th and 16th centuries may be got from the wood-cut pictures in Agricola's treatise *'De re metallica'*, first published in 1556. Foreign miners were often brought to Britain to improve our mining technique.

Quarries

Medieval and early stone quarries are not usually difficult to recognise. In the absence of explosives the medieval quarryman was limited in the scale of his operations. These usually took the form of removing top-soil and piling all overburden along the sides of a wide trench. The stone suitable for building was then got out to a moderate depth, mostly by exploiting natural weather fractures. Old quarrying areas are covered with these open trenches, pits, and mounds of rubbish, all now well covered with grass and bushes. Examples of such quarries may be seen at Barnack in Northamptonshire, the source of a stone much used in the east of England. Here there is a large rough area called 'Hills and Holes' which is a classic example of its kind. The old quarries from which the stone for the famous church of St. Mary Redcliffe at Bristol was got are still visible on top of the neighbouring Dundry Hill.

The danger of old quarries to the field archaeologist is that he may easily mistake them for something else. An example of this was the attempt, based on the mis-interpretation of certain isolated quarry trenches in Ashton Park, to carry the line of the Wansdyke from Dundry Hill westwards to the Severn shore. Here they were mistaken for parts of a linear earthwork; elsewhere they have been confused with Iron Age hill forts.

Kilns

Medieval kilns for the production of pottery, brick, and tile are being increasingly recognised through the usual evidence of waste material. The importance of identifying pottery kilns and their products is obvious. Place names can be an important clue as with Potterspury in Northamptonshire and Potter Hanworth near Lincoln. Although some brick seems to have been imported from the Low Countries very early, as at Coggeshall Abbey, and the art of making brick may have been known in Anglo-Saxon times, there was no extensive brick production before the 15th century. It was otherwise with tiles. Not only were high-quality inlaid encaustic tiles for decorative flooring and other simpler kinds produced here as early as the 12th century, but roofing tiles were already in regular production and use by that time, as well as decorative pottery figures and other details for application to gable ends and other architectural use. None of these tile-making industries was very large and they were often set up close to the site of a building solely for the purpose of carrying through one particular job as, apparently, at Clarendon Palace for the tiled floors there.

Salt-making

This is a perennial industry, and it was actively carried on in Anglo-Saxon and Medieval times. Much of it was made on the coast, but inland sources of brine like Droitwich now made an increasing contribution to the total salt production, and there was a regular system of routes both from here and from the coasts used in the distribution of salt. Some are still known locally as Salt or Salter's Way. There were few coastal areas in Britain which were not producing some salt in this period.

Many documents attest medieval salt manufacture and the various dues and tolls to which it was subjected. In a major salt-making area like the coast of Lincolnshire the old sites can be seen as a series of low, extensive, and roughly oval mounds stretching a long way inland from the modern coast line. The edges of these mounds sometimes have a scalloped effect from the running out of various tips of material from them. When the arrangement of the mounds is plotted on a map it will be seen that they occur in a series of rows more or less parallel with the coast and each other. These rows are successive in age, with the oldest furthest inland. Salt was made at points a little above the normal tide line, but where the sea overran the ground for several days at each spring tide. The silt which was then saturated with

salt was raked up and the salt extracted as brine by a primitive filtration process. The brine was then boiled down into salt and the exhausted silt was piled on to a heap. In this way the mounds grew by each boiling site, and with the retreat of the sea the process followed the tide mark, thus producing the successive ranges of mounds. All this can be seen very clearly from the air and also from a late Elizabethan map of the Tetney area near Grimsby made by John Hayward. The activity of the Lincolnshire coast sites is widely attested in Domesday Book, and some were still working in the 17th century.

Water mills

Reference has already been made to the use of water power in the iron industry, and it had two other important early applications to corn milling and the fulling of cloth. Water mills were certainly known in this country in Roman times, though the only sites of which there is no doubt are all on Hadrian's Wall. The position in Anglo-Saxon times is only reasonably clear in the 11th century when the reference to many mills in Domesday Book makes it plain that they had been a familiar feature by the time of the Norman Conquest.

The possible remains of a late Saxon water mill have recently been found on an old branch of the Thames at Old Windsor. Early water mills were often very small and easily destroyed without a trace of their structure remaining except, perhaps, some stumps of piles in a stream bed. But the earthworks and artificial channels required to collect and direct a head of water are usually the best clue to the former existence of a water mill.

Windmills

The mention of mills in Domesday Book at places where, by the absence of any suitable stream, there can never have been a water mill does not imply the use of wind power. It has been assumed that these mills were worked by animal or slave power, and the recent find of the lay-out of such a mill at the late Saxon royal residence at Cheddar has confirmed that such mills were used, though they will leave no surface traces and can only be found by excavation.

The introduction of windmills was a result of the Crusades and their sites can sometimes cause trouble in field work because they were often placed on mounds to give them a better advantage of wind at low situations. When the mill has gone the mill mound can be mistaken for a round barrow. Genuine windmill mounds are usually of flattish profile and they often have an earthen ramp leading on to them. The only certain way of proving them is by excavation. If the mound has carried a wooden post-mill there should be the trace of the two foundation beams arranged crosswise with the central post rising from their intersection. There is also the question of siting for wind and some mounds may be ruled out as windmill mounds by this factor alone.

Fulling mills

The fulling mills used heavy wooden pounders driven by a water wheel to work cloth and give it more body. Their sites will not normally be distinguishable from those of corn mills.

See:

- E. H. RUDKIN, D. M. OWEN and H. E. HALLAM: The medieval salt industry in Lincolnshire, *L.A.A.S.*, viii, 1959-60, 76-112.
- AILEEN FOX and G. C. DUNNING: A medieval pottery kiln in Exeter. *Ants. J.*, xxxvii, 1957, 43-53.
- E. M. JOPE and G. C. DUNNING: The use of blue slate for roofing in Medieval England. *Ants. J.*, xxxiv, 1954, 209-217.
- J. W. GOUGH: The Mines of Mendip, Oxford, 1930.
- E. STRAKER: Wealden Iron, G. Bell and Sons, 1931.

Civil war sites

The Civil Wars of the mid-17th century were the last major military events to occur in Britain and also produced some of the latest earthworks thrown up before the Industrial Age. The principal remains are siege works. Newark-on-Trent still retains the tolerably complete remains of a complete investment in the form of redoubts and battery positions of types characteristic of the field fortifications of the time. Many castles and country houses also stood sieges, but there seems to have been little attempt to increase their strength by throwing up outworks as a matter of regular practice.

An exception to this is the site of Basing House at Old Basing in Hampshire where the Marquess of Winchester built impressive works round his mansion which, in its turn, had been built on the site of an earlier castle. The object of this, pursued with some success, was to block traffic along the main road to the south-west, and the final storming of the place required a major effort by the New Model Army. Donnington Castle near Newbury, whose obstinate defence brought on the second battle of Newbury, had buildings of no great strength, but new outworks of modern type made it a hard nut to crack.

But if defences of this kind are uncommon, the battery positions of attackers can sometimes be recognised, and a curious example, defensive in this case, is that contrived in the Roman amphitheatre at Maumbury Rings outside Dorchester in Dorset. It will always be worth while to examine the ground round a house known to have been besieged at this time, for there may be unexpected traces of the episode like the battery site in the park at Cornbury House near Oxford.

There are also a few specially-built forts the best examples of which are in the Fenland. Small earthwork forts of star design survive in good condition at Earith in Huntingdonshire and at Horsey Hill near Peterborough. These were designed to protect drainage works then in progress. Otherwise the expansion of towns in modern times has swept away the traces of 17th century fortification such as existed round London, Oxford, and Hull. The only virtually unaltered major fortification of the period is the Citadel at Plymouth, and this was built soon after the Civil War.

The following book and articles may be consulted:—

B. H. ST. J. O'NEIL: *Castles and Cannon, a study of early artillery fortifications in England*, Oxford, 1960.

—: *A Civil War battery at Cornbury, Oxfordshire, Oxon.*, 1945, x, 73-78.

A. D. SAUNDERS: *Tilbury Fort and the development of artillery fortifications in the Thames Estuary*, *Ants. J.*, 1960, xl, 152-174.

THE FIELD ARCHAEOLOGY OF THE INDUSTRIAL REVOLUTION

At various points we have already considered the relatively simple field indications of industrial processes from the earliest times down to the threshold of the modern age. To continue, the 17th and early 18th centuries saw continuous technical advances in the textile, extractive, and metallurgical industries which foreshadowed big developments, and the first primitive application of steam to the production of power by the Newcomen type of atmospheric steam engine was another portent, but the onset of the full Industrial Revolution with its vast re-groupings of population, developing factory system, and widespread improvements in communications by land and water did not make its impact really felt much before the French Revolution.

Some people may be surprised to learn that such a movement can properly be regarded as having an archaeology, and one which requires early attention to its remains if they are not to be lost as completely as many of the traces of our prehistory. The present urgency is caused by the necessary clearance of much of the building and machinery equipment of our older industrial districts

to make way for modern factories conceived on lines which completely abolish all traces of the older dispensation. In some of the areas most heavily involved in the earlier stages of the Industrial Revolution near desert conditions have been produced by indiscriminate mining, shoddy building, casual dumping of waste materials, etc. Various schemes are on foot for the reclamation of these sordid areas, and during the course of the work there is more than a chance that various historical features belonging to the early phases of industrial development will be swept away. In many cases their disappearance is no loss, but it is most desirable that there should be a record of their position and character before they go.

The principal categories of early industrial features which require record and, in some cases, preservation, are as follows:—

1. Surviving sites and structures belonging to the critical early phases of the major industrial developments.
2. Structures which are important early examples of new methods of building for industrial and other purposes.
3. Examples of small self-contained workshops and plant belonging to early phases of manufacture which are often sited in relation to water power.
4. Important examples of early power and other machinery which are still working or in fair condition.
5. Surviving features belonging to the early development of modern transport. These will include canal works with special reference to aqueducts, tunnels, and systems of locks; the course of early tramroads and railways which have been abandoned; notable examples of early railway architecture; early features belonging to the development of docks and harbours; important examples of early road improvement.
6. Early examples of planned industrial communities.
7. Pioneer works connected with water supply, drainage, and public health.

It will be apparent that much of this work cannot be brought under the heading of field archaeology, and the list is only rehearsed to give an idea of the extent of industrial archaeology as a whole.

Field archaeology as we understand it will be largely confined to categories 1, 3, and 5.

An example under category 1 has been the recent clearance and consolidation of what remains of the smelting furnace at Coalbrookdale in Shropshire where Abraham Darby first smelted iron with coke in 1709. Round Sheffield, Birmingham, and elsewhere category 3 requires attention so that some good examples of early small units in metallurgical industries may be preserved. Category 5 will offer the largest number of purely 'field' features, particularly in areas of early large-scale mining like Northumberland, Durham, South Wales, and Cornwall.

The Ordnance Survey began its work in 1791, and by 1830 had covered two-thirds of England on the 1 inch scale. Thus many of the most important features of the new age appear on its maps as a matter of course, and their subsequent fate can be followed up in the later editions to the present day.

Industrial archaeology requires specialised knowledge, and will largely take the form of visiting and making plans and photographs of buildings, machinery, and other obvious features. Much of it will be reinforced by study of various kinds of records like old business accounts, early directories, early newspapers, etc. It can either be tackled regionally or by subject, and it should commend itself particularly to the economic history departments of universities, but the sands are running out, and it must be tackled now.

See:

E. R. R. GREEN: *Industrial Archaeology*, Ant., xxxiv, 1960, 43-48.

LINEAR EARTHWORKS

Most of the earthworks of Britain are concerned with the enclosure of limited areas for defence, but there is an important exception to this known as the 'linear' or 'travelling' earthwork which usually consists of a single bank and ditch running between two points, often miles apart. Such works can belong to extensive systems which do, in fact, create a number of large enclosures, but the purpose of these is not defensive. The size and length can be very variable, depending on the purpose of the linear earthwork. Their use covers a long period of time, for the oldest at present recognised belong to the end of the Bronze Age . . . circa 750-500 B.C. . . . and the latest are the work of the Middle Ages. (See Medieval enclosure banks, p. 131.)

It is possible to divide all travelling earthworks into two classes:—

1. Those made primarily for defensive and obstructive purposes.
2. Those constructed primarily as boundaries.

The most striking examples occur in class 1. In the South and South-west there is the Wansdyke covering much of the country between Bristol and Marlborough. On the Welsh border Offa's Dyke and its related work Wat's Dyke extend for well over a hundred miles between the estuary of the Dee and the Bristol Channel, and in East Anglia there is the famous system of the Cambridgeshire dykes.

In the cases of Wansdyke and Offa's Dyke the purpose of the work is clearly the definition of major frontiers over long distances. Wansdyke, formerly thought to run in a continuous line from south of Bristol to the North Hampshire Downs . . . fully 40 miles . . . has now been reconsidered in the field. It appears that the central section between the Avon at Bathampton and a point north of Devizes has never really existed, and that its use of the line of the Roman road from Silchester to Bath between these points has been assumed without any real evidence. It thus falls into two sections, an eastern and a western one. The eastern section, which is by far the stronger, covers the whole of the line of the Marlborough Downs and ends in the difficult country below Inkpen Beacon. It has been suggested that this line was built by the early west Saxon king Ceawlin after A.D. 584 to define his northern frontier against the Angles of the Midlands. The western section does no more than hold the high ground on the south side of the valley of the Bristol Avon between Bristol and Bath. The only thing which is certain about it is its post-Roman date. It may be the work of Britons of the South-west in the early 6th century resisting Anglo-Saxon pressure into North Somerset, or it may be a feature of the defence of Wessex itself against pressure from Penda of Mercia in the mid-7th century.

Although we have no precise historical details about Offa's Dyke there can be no doubt that its construction was an historical event belonging to the latter part of the 8th century and the work of Offa himself in an attempt to define the frontier between Mercia and the Welsh. In this it was quite successful. It is not a continuous work, for it makes considerable use of the water obstacle of long stretches of the course of the Middle Severn and the lower Wye. In its northern course it is doubled for some distance on its eastern side by another work, Wat's Dyke, whose precise relation to it in time is not known, and there is also a number of lesser forward works on the Welsh side which cover advanced settlements and confirm weak places in the line. This bank and ditch must have originally been a definite obstacle to east-west passage, but its great length makes it incapable of any continuous defence. Like the work which showed the boundary between the North-west Provinces of India and Afghanistan, it left the position of the frontier in no doubt, and it could always be patrolled.

Most of the obstructive type of linear earthworks are sited to cover natural lines of passage, and they often rest their flanks on natural obstacles. Where the latter have now vanished through drainage and disafforestation the earthworks as they are today are often 'in the air'.

The Cambridgeshire Dykes are a text-book example of this type. A narrow belt of open chalk country with good going underfoot carries the Icknield Way out of Hertfordshire at Royston across to the Norfolk boundary near Thetford. To the north-west of this line is the Fenland which was a great natural obstacle in post-Roman times, and to the south-east is the close clayey country of the East Anglian Heights, liable to be covered by dense scrub in a state of nature. Three major linear earthworks and one minor example cover this corridor to a total depth of about twenty miles. The largest of the three and the furthest to the north-east is the Devil's Dyke of Newmarket Heath fame. This is nine miles long, and was originally a huge obstacle. Where best preserved at its north end and near Swaffham Prior it is still one of the most impressive works in Britain. There is still argument about the age of these works, and it has been claimed that they were built by the Anglo-Saxons in retreat after the battle of Mons Badonicus *circa* A.D. 500. A more probable explanation is that they were built by the East Angles to protect themselves against the constant pressure of the Mercians in the 7th century. In their siting they may reflect variations in the fortunes of this struggle which usually went against the East Angles.

The principal of closing natural gaps and trying to control movement may be seen at work in many places; in Dorset where the Bokerly Ditch covers the way from Old Sarum to Dorchester; in Lincolnshire where King Lud's Intrenchments control Sewestern Lane; in Yorkshire where Becca Banks control the northward line of advance at Aberford. Short but equally clear examples may be found on almost every escarpment that has a ridgeway along it; their purpose was clearly obstruction and control of a natural highway.

Another variety of linear entrenchment is that which occurs in the lands surrounding Roman towns. The best examples are those at Chichester and Silchester. Excavation has suggested that they antedate the towns and that they do not represent a late phase in the Roman period when the lands attached to towns had to be delimited and defended. They seem to be analogous to the linear earthworks associated with great Belgic sites like Colchester and St. Albans. Some of these were very extensive and often depend for full understanding on the reconstruction of ancient woodlands.

Practically all the examples of defensive earthworks mentioned above are of late Roman or post-Roman date, and in the case of the greatest examples it is permissible to see the influence of Roman frontier works both here and on the Continent.

In class 2 are banks and ditches, usually of slighter construction, which are, in general, designed as boundary banks and have no defensive purpose. There are many of these in the South, and particularly in Wessex. On the north-west side of Salisbury up the valley of the River Bourne there is an extensive system which has been plotted. It encloses tracts of land and there is reason to believe, through its antedating the Iron Age hill fort at Quarley Hill, that it may belong to the period of Late Bronze Age—Iron Age transition. This is of particular interest because of its early date and its implications of social organisation, but many more or less continuous stretches exist, often closely connected with ancient settlement sites. These may have been boundaries of cattle ranches or sheep walks. In their original state, and possibly strengthened by a wooden fence or rows of hurdles, they would have been sufficient obstacles for this purpose. A good example may be seen on Stockbridge

Down in Hampshire south of the Iron Age hill fort of Woolbury where a continuous bank clearly separates a system of ancient fields from a large area of open downland pasture.

One hundred and fifty years ago East Yorkshire and the southern part of the North York Moors showed one of the most complete and complex systems of boundary banks in Britain, but by the middle of the 19th century most of it has succumbed to the ploughs of improving landowners. The banks were often double and triple, rising in the case of Scamridge Dykes, still fortunately preserved, to the remarkable number of seven parallel banks covering a strip of land nearly 500 feet wide. Where these multiple boundary banks meet Bronze Age barrows they either avoid or flow round them. This plurality of banks suggests that they may have been designed to stop the driving off of cattle which could not have been got across them without much trouble. Nothing positive is known of the age of this system but, on present showing, it seems to belong in general to the Iron Age. Air-photography has recently shown at least one hill fort and a number of native farmsteads in this area, and the whole system requires intensive study in the field. Where many of the earthworks have been ploughed down their lines may be reconstituted from the early editions of the Ordnance Survey maps.

The course of many linear earthworks still remains to be traced and marked on the map. Where they run across open downland there is no great difficulty in following them. Nor is it much more difficult where they cross arable land if the cultivation is of comparatively recent origin. A band of lighter-coloured soil, usually associated with a very slight and much spread bank, will reveal their course. But when they go over land that has reverted from arable to pasture it is more difficult to follow them. It is here that the method of 'bosing' mentioned above in the 'Work in the Field' section (p. 11) will show up the existence of a filled-up ditch. This was first used by General Pitt Rivers and was also applied successfully by Dr. E. C. Curwen (see his 'Prehistoric Sussex', pp. 151-5). Anything more than the relative dating of linear earthworks is difficult. It is necessary to look carefully to see what they seem to over-ride, and also what over-rides them. If these features can be dated, then the linear earthwork can be dated in general relation to them. Critical points of this kind can be observed and, if possible, excavated, but it must be remembered that by their nature linear earthworks are not likely to yield much dating material. Something may be found on the old ground surface under the bank, and the successive siltings of the ditch may round out the story by their contents, but the greater part of the length of any linear earthwork will never have been a place of much resort and so will not provide many clues. Judgment must be used in picking places to make tests if there is not to be much unproductive labour. This may be the reason why a number of resolves to make a concentrated attack on the problems of linear works have quietly petered out.

In recent years mechanical aids in tracing the existence of underground features and plotting their extent have been developed in the form of the Megger resistivity survey apparatus and the proton magnetometer. So far their results have been impressive, but they are expensive and not for the amateur field worker.

Air-photography has, of course, greatly helped the tracing of both large and small linear earthworks. It has been proved that, however long a ditch and bank may have been filled and levelled, its course is revealed, under suitable conditions, by the growth of crops. For a complete survey both air-photographs and field work are required; air-photographs never dispense with the need for field work; rather they emphasise and supplement it.

The following books and articles may be consulted:—

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 ———: *The Chiltern Grim's Ditches*, *Ant.*, v, 1931, 161-171.
 SIR CYRIL FOX: *Offa's Dyke*, a field survey . . . , for the British Academy, Oxford, 1955.
 ———: *Dykes*, *Ant.*, iii, 1929, 135-154.
 ———: and AILEEN FOX: *Wansdyke reconsidered*, *A.J.*, cxv, 1958, 1-48.
 GENERAL PITT-RIVERS: *Excavations in Cranborne Chase*, vol. iii, 1892. *Bokerly Dyke and Wansdyke*.
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 J. P. WILLIAMS-FREEMAN: *Cross-dykes*, *Ant.*, vi, 1932, 24-34.
 ———: *The Chichester Entrenchments*, *Suss. A.C.*, lxxv, 1934, 65-106.
 C. W. PHILLIPS: *The Victoria History of the County of Cambridge and the Isle of Ely*, vol. ii, 1948, 5-13. (The Cambridgeshire dykes).
 J. R. MORTIMER: *Forty years' researches . . . in East Yorkshire*, London, 1905, 365-380. (An account of the linear earthworks on the Yorkshire Wolds).
 F. L. PRESTON: *A field survey of the 'Roman Rig' dyke in South-west Yorkshire*, *Transactions of the Hunter Archæological Society*, vi, 1950, 197-220; 285-309.
 J. H. CRAW: *The so-called Catrail*, *P.S.A.S.*, lviii, 1924, 40-44.
 C. F. C. HAWKES: *Report on the excavation at Quarley Hill*, *P.H.F.C.*, xiv, 1939, 43 ff. (Discussion of the Late Bronze Age (?) boundary ditch system in the valley of the river Bourne.)
 ——— and M. R. HULL: *Camulodunum*, *Research Report of the Society of Antiquaries*, No. xiv, 1947, 8-21. (The Colchester dykes).
 Ordnance Survey map of the Dark Ages, two sheets, north and south, Ordnance Survey Office, 1938-39.
 SIR CYRIL FOX, B. H. ST. J. O'NEIL, and W. F. GRIMES: *Linear earthworks: Methods of Field Survey*, *Ants. J.*, xxvi, 1946, 175-179.

TRACES OF ANCIENT AGRICULTURE

The recognition of ancient arable fields and other farming enclosures long ante-dating the Roman period in Britain is a development of the last fifty years. Both in England and in Denmark there were pioneers at the beginning of the 19th century who surmised correctly that what they could see on the downs of Wiltshire and the heaths of Jutland were traces of early agriculture, but the matter was not followed up in either country until after the first World War.

The only certain evidence for the most ancient cultivation of food crops in Britain takes two forms. The impressions of grains of wheat are sometimes found on the outside of Neolithic pottery and pollen analysis has shown concentrations of the pollen coming from plants belonging to cultivated ground at or near Neolithic sites. This means that there was actual grain lying about when pots were being made, and that patches of cultivation were not far away. Nothing has yet been seen on the ground which can be claimed as a Neolithic field or garden plots, though this claim has been made for certain small walled plots on Dartmoor without any real justification. Much of this earliest cultivation must have been of the primitive cut-and-burn kind which continually moves on to new ground and uses no larger implement than the hoe.

The visible evidence on the ground which belongs to a later period falls into the categories of ancient field systems and cultivation terraces. The latter can be the product of both prehistoric and more recent agriculture and as they are a striking aspect of the field archæology of cultivation in Britain they will be given separate treatment below.

Ancient field systems

These can be seen either as stretches of downland covered by a system of slight banks making up a pattern of small enclosures, or they can appear on air-photographs through the differential growth of crops and variations of soil colour showing their boundaries where all has been levelled by the plough.

In some parts of the country where there is suitable material the field divisions were dry stone walls and long banks of stones picked off the old fields and dumped along their edges can also define their limits. These, and also the divisions which consist of slight earthen banks and ditches, can show very clearly as relief features or colour features on air-photographs. The banks provide an outstanding subject for photography in a low sun, and lightly drifted snow can also pick them out very clearly. Examples abound in the South, and there are many surviving in many upland situations in the North where they are often less exposed to modern agencies of destruction, always excepting the Forestry Commission.

A description of all the types of ancient fields is beyond the scope of this work. The great antiquity of the cultivation of food crops in this country is in no doubt, and the oldest plough agriculture which has been recognised so far in Britain may be dated well back into the second millennium B.C., and certainly into the Middle Bronze Age. The first recognition of these very early field systems took place in Sussex and Wiltshire. A number of sites on the South Downs, notably at Park Brow near Worthing and at Itford Hill near Lewes, have been excavated and shown to belong to the Late Bronze Age. There are round compounds containing round huts and clearly associated with them are systems of small more or less rectangular fields marked out by low banks. The recognition of similar sites at Rockley Down north of Marlborough followed these Sussex finds, but some of the most dramatic evidence has recently been found by Mr. A. C. Thomas in his excavations at Gwithian in West Cornwall. Here the liability of land near the sea to be overrun by blown sand has preserved remarkable patterns of plough marks made by the primitive plough known as the ard. Cross ploughing is probable and at least two levels of cultivation have been distinguished separated from each other by sand blows. There is also striking evidence of the use of wooden spades. At Gwithian the associated archaeological material suggests an earlier date than that of the Sussex sites. Another site at Albury in Surrey has recently given more evidence of ploughing close by round huts of Late Bronze Age date. In both cases it has been possible to recover a clear idea of the pattern of the ploughing. It must be emphasised that this kind of evidence can only be got by excavation and nothing can be seen on the surface. On the other hand the Albury site declared itself by a surface scatter of pottery from the huts, and it was the examination of these huts which led to the finding of the plough-marks; thus the field worker can make a contribution.

The covering of most British moorlands by a more or less thick blanket of peat since late prehistoric times has obscured many traces of cultivations which, by reason of their having used the old land surface under the peat, are unlikely to be later than the Late Bronze Age. As with the sandy sites mentioned above, the existence of the old fields can hardly be appreciated either on the ground or from the air without excavation, or what amounts to the same thing on the peat moors . . . the removal of the heather and peat cover by a fire. The North York Moors afford excellent examples of this as at Iron Howe, Hawnby Moor, where a very extensive system of old field boundaries and cairns was revealed by a fire in 1959. These fields are quite small and of irregular pattern, divided from each other by banks of gathered stones and liberally sprinkled with small cairns, the reason for whose existence is not certain. Some may have contained burials, but the majority was probably produced by stone clearing. There is a number of these sites in North Yorkshire at or near the 1,000 foot contour and, while some are certainly as old as the Bronze Age, others are like the 'Celtic' fields of the South and are probably Late Iron Age and Romano-British in date. These are not in the peat areas. The fairly frequent finding of rotary querns in the more favoured parts of these moors is additional testimony to former agriculture on ground now given over to the grouse.

Another classic Northern area is Upper Wharfedale round Grassington and the moors between Malham and Ingleborough. Evidence of small agricultural groups is also forthcoming in Scotland with stone clearance heaps, limiting dykes of gathered stone and round huts. A beginning in the Bronze Age also seems possible here though many of the sites are doubtless later.

The generally rectangular form of early field in Britain may result from a desire to practice cross-ploughing because of the inefficiency of the early plough; an outstanding fact is that from about the year 500 B.C. onwards for a thousand years to the close of the Roman period this type of arable field shows little significant change. Our knowledge of these fields in the South derives from the fact that some of the marginal lands on which they were sited ceased to be cultivated to any great extent after the Anglo-Saxon settlement. Thus they have survived under the grass to which many of them returned, but recent critical study of them in the field has shown that some were certainly under the plough once more in the Middle Ages. In the first flush of their recognition forty years ago it was thought that there had been a clear-cut abandonment everywhere on the marginal lands in Anglo-Saxon times, but the true situation is not so simple.

It must not be assumed that what we see today was all that was cultivated in prehistoric times. With the exception of the ancient fields in the Fenland, which are certainly of Roman date and not earlier, few traces of this type of agriculture survive off the higher and drier grounds, but the economic background of people like the Belgae whose lands contained a predominance of heavier soils certainly contained much agriculture. Traces of these so-called 'Celtic' fields can be seen in the flat coastal plain between Chichester and the sea, and a vast amount of this pattern of agriculture must have been completely obliterated by Anglo-Saxon and Medieval cultivation which employed quite different field systems.

Two World Wars accompanied by great ploughing-up campaigns have played havoc with many of the surviving traces and their recognition and planning is now an urgent matter. Air-photography, besides giving us excellent views of the systems on the chalk uplands, has also shown how thickly prehistoric and Romano-British cultivators settled on the gravel spreads of river valleys and other suitable areas. The native farming in the Fenland in Roman times has already been mentioned, and here specialised activities can be seen which are not yet fully understood. Some of the enclosures must be paddocks and pasturages for cattle, but others are certainly due to the need for drainage of the cultivated area, not only by the provision of open drains round the fields, but also, in some cases, the mounding-up of the surfaces of the fields themselves. Much of this rural life in the Fens must have been precarious. There is plenty of evidence of material prosperity here, but the very existence of any settlement in the Fens had depended on an improvement in the relative levels of sea and land here at the beginning of the Christian era. This was enhanced by some artificial drainage, but when natural conditions deteriorated in the late 3rd and 4th centuries there was a general collapse and an abandonment of most of the area.

Cultivation terraces

It is quite common in hilly country, and particularly on the chalk lands of the South, to see long level strips of land running along the contours and ranged one above the other like the steps of a staircase. These abrupt drops from level to level are known locally in Wiltshire by the name of 'lynch' or 'lynchet', and most of them have been formed naturally on the lower boundaries of parcels of cultivated ground through the gradual downcreep of soil when it is annually disturbed by ploughing. In medieval times the common fields were divided into acres and furlongs held by many different tenants.

If the common field so divided lay on the slope of a hill a cultivation terrace or 'lynchet' formed on the lower boundary of each parcel in the course of time.

While this explanation will account for many cultivation terraces there are some examples which occur on such steep slopes that it is difficult to see how they could have been started and any cultivation carried out without some preliminary artificial terrace construction. No conclusive evidence on this point has yet come to light, but the facts of the case seem to demand it. A good example of this extreme form of terrace will be seen on the steep slopes north of Mere in Wiltshire, and it is a matter for consideration whether any ordinary crop could conveniently be grown in such a situation. Something like the cultivation of the vine would seem to be more likely.

The elongated lynchets mentioned above all belong to post-Roman times, but there is another type, common on the chalk downs, which is much older. This differs from the strip type by belonging to systems of fields whose units are rectangular enclosures . . . in fact the 'Celtic' type prevalent in later pre-historic and Roman times. When these fields occur on sloping ground they have a lynchet on their lower boundary, while the two sides running up and down hill are delimited by broad low banks. Along the upper boundary there will also be a downward step caused by the soil slipping away to some extent downhill and, if there is another similar field immediately above, the lynchet belonging to this one will be added to this step to make a still greater difference between the levels of the two fields.

These chequer-pattern systems of lynchets bear no relationship to the existing system of field boundaries which dates ultimately from Saxon times. They are often found in close association with Romano-British hamlets and farmsteads and there can be no doubt that they are the remains of the fields belonging to these sites. Their present form and arrangement is that which obtained when they were abandoned at the coming of the Saxons. But since many of these sites were certainly occupied before the Romans came it is certain that the agricultural system which they represent dates from pre-Roman times. Another proof of the antiquity of these chequer-pattern fields is seen in their relation to Roman roads. Whenever the raised causeway of a Roman road runs across a piece of open down covered by such lynchets it will be seen that the Roman road never intersects one of them, nor do they ever cover or obliterate the Roman causeway. From this mutual respect it may be concluded that in their present form both are contemporary, and that the fields were being tilled when the Roman road was in use.

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TRACKWAYS

The subject of ancient trackways has always appealed to amateur field archaeologists and has given rise to much imaginative writing well divorced from common sense and the plain facts of the case. Since there is no evidence of any attempt to construct roads of any length before Roman times, and since prehistoric man must have moved about the country fairly freely . . . witness the early trading in flint, stone, and metals . . . one person's guess about an ancient local route is usually as good as another's, provided that due attention is paid to the natural facts which must control any movement on land. Examples of ancient land routes exist in plenty in Britain, but their courses are not determined by 'mark stones' or the other paraphernalia of those who believe in the 'Old Straight Track'.

While it remains true that there is no known system of constructed roads of any length belonging to prehistoric times, recent discoveries have shown that local attempts were made to maintain established routes where they had suffered local interruption. Clear cases are the brushwood and timber causeways which have been recognised in the Somerset Fens, notably round Shapwick. Pollen analysis has securely dated these to both Neolithic and Late Bronze Age times and the later ones, at least, would seem to be an attempt to overcome the difficulties in communication across the low ground caused by flooding due to climatic deterioration. These attempts, though carried out with great skill, were only successful for a while, and all were overwhelmed in due course by the growth of peat. Today it is the commercial digging of peat which reveals them again. Another causeway of the same kind supported on long piles joined the Isle of Ely to the higher ground at Stuntney in Cambridgeshire, and no doubt others remain to be found.

In the face of this no one can safely assert that the Iron Age, which is so productive in evidence of large communal effort, created nothing similar, but nothing has come to light which is securely dated, and there is no evidence for surfaced roads over ordinary country.

Examples of routes of great antiquity are the Ridgeway of the Berkshire Downs with its long extension via the Chiltern escarpment into Norfolk known as the Icknield Way; the North Downs trackway (incorrectly called the Pilgrims' Way); its westwards extension via Basingstoke known as the Harrow Way; the complex of trackways along the Jurassic zone from the neighbourhood of Bath to Lincoln and East Yorkshire; the High Street running along the western escarpment of the Lincolnshire Wolds from Horncastle to the Humber and beyond, and many others.

There is nothing necessarily ancient about these trackways as we see them now. The actual route which represents them today, whether it is a grass-grown lane or a secondary road, is merely the modern result of local people reacting to the facts of geology and topography which have long dictated the pattern of human movement about the country. The only certainly ancient features belonging to them are those which can sometimes be seen from the air. At various points along the general route of the Icknield Way long-abandoned systems of one or more hollow ways can be seen as crop or soil marks in the ploughed fields, and they are particularly clear where some

difficult piece of ground has to be negotiated. Even in these cases we can only say that they are old, but their age can only be judged approximately by their relation to dated features. At Mutlow Hill in Cambridgeshire the signs of ancient tracks in the general line of the Icknield Way as they approach the Anglo-Saxon linear earthwork called the Fleam Dyke suggest that they are making for a passage through it and so are later than the 7th century.

Under primitive conditions trackways were not narrowly confined thoroughfares like roads today. The need for picking out the best piece of going when no made surface protected the route against the effects of weather led to the frequent widening of these routes to an indefinite extent on both sides. This state of things continued right into modern times when, in the late 17th century, travellers on the Great North Road found it easier to drive through the adjacent ploughed fields than along the hopelessly foundered course of the road. In the case of ridgeways the same principle led to the creation of upper and lower variants of the route to be used at different times of the year, and this is well illustrated by the course of the Icknield Way along the Chilterns. The encroachments of modern husbandry have now confined most of these trackways within the dimensions of an ordinary road with good grass verges, but air-photographs will often show many signs of former extensions of width and variations of course along them.

There are various field features of old land routes which require further explanation.

By the side of nearly every important highway, where it descends a hill, a number of parallel ditches may be seen, or sometimes a single deep ditch. These represent the tracks made by the traffic before the roads were metalled. Their origin is a natural one. The traffic itself (mostly horses and mules) would wear away the surface, and every fall of rain would turn the track into a rivulet; the rivulet in turn hollowed out a channel for itself. In the course of centuries small ravines were formed. As each grew deeper and more inconvenient a fresh track was taken along the outer margin. The same process was repeated again and again until the limit of convenient straying from the original line was reached, by which time, probably, the original hollow track had become overgrown with grass and comparatively passable again. The fan-shaped systems of tracks which result from this process may be seen forming a regular pattern on the open hillside.

They may also be seen by the sides of Roman roads on steep slopes, showing that in the days of their decline, at least, traffic was by no means confined to the crown of the causeway. A good example will be seen where the Roman road from Winchester to Old Sarum comes down the hill across the line of the modern Andover-Salisbury road. But the tracks probably first began to form when the Roman power had broken down and there was no central authority to keep the road in repair. This is strongly suggested by the fact that often two such hollow tracks, one on each side of the causeway, have become so deeply worn that they have eaten away the causeway on either side. In such instances the causeway is represented only by a narrow stony ridge, far too restricted for any traffic to follow. Tracks of this kind by the side of now entirely disused Roman roads may have been in use into quite recent times.

An example of the multiple tracking of an old route where a Roman road is not concerned can be seen on Postern Hill up which the road from Marlborough to Andover climbs on the south-west side of the former town.

With the exception of a few hollow trackways leading up to hill forts, often called, and probably rightly, 'cattle tracks', there are few remains of hollow ways which—in their present state—can be regarded as prehistoric, and none

which can be attributed to an earlier period than the Iron Age. Nor have any such tracks been recorded which appear to have been bridged by a Roman road and so be older than it.

In the downland areas of the South there is a considerable number of terraced tracks leading obliquely up the sides of steep escarpments. They are known locally as 'bostals' in Sussex, and many of them are certainly very old because they seem to be connected with the large systems of ancient fields on the top of the Downs. In one or two cases these terrace ways are part of the course of Roman roads which make an easy ascent in this manner.

There are certain lanes or cart-tracks to be seen making their way between the individual enclosures in prehistoric and Romano-British field systems. They present no abnormal features across level ground but sometimes they are making their way along a contour with adjacent fields above and below. In such cases a 'double lynchet' way is formed so that the track has a steep bank above its upper side and a sudden drop, or negative lynchet along its lower edge. In this case it is plain to see that the way has been an integral part of the field system since its beginning, and the cultivation on a slope on both sides has converted the track into a terrace through the downhill movement of the ploughed soil. In stony countries, where the fields are separated by walls or banks of dry stone, such tracks are revealed by a continuous double line of walling as in the notable field systems on Bathampton Down near Bath and on Kingston Down in the Isle of Purbeck.

The Fenland contains many miles of unmetalled droveways of Roman date which connect up the various farmsteads and wander among the fields and closes in a casual fashion. They owe nothing to planning and were clearly similar to the modern droveways in the area in everything but directness.

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(N.B. Grundy's work must be used with caution. It contains useful material, but he was not a field archaeologist.)

Time scales

Many people do not have a well-developed time sense where long periods of history and prehistory are concerned. It may therefore be useful to give some simple visual demonstrations of the relative lengths of the periods with which archaeologists are concerned. These are given in the three accompanying scales.

SCALE 1 is designed to bring out the insignificance in time of the period in which man has been the dominant force on this planet when set against the half a million years during which he has been slowly arriving at this position.

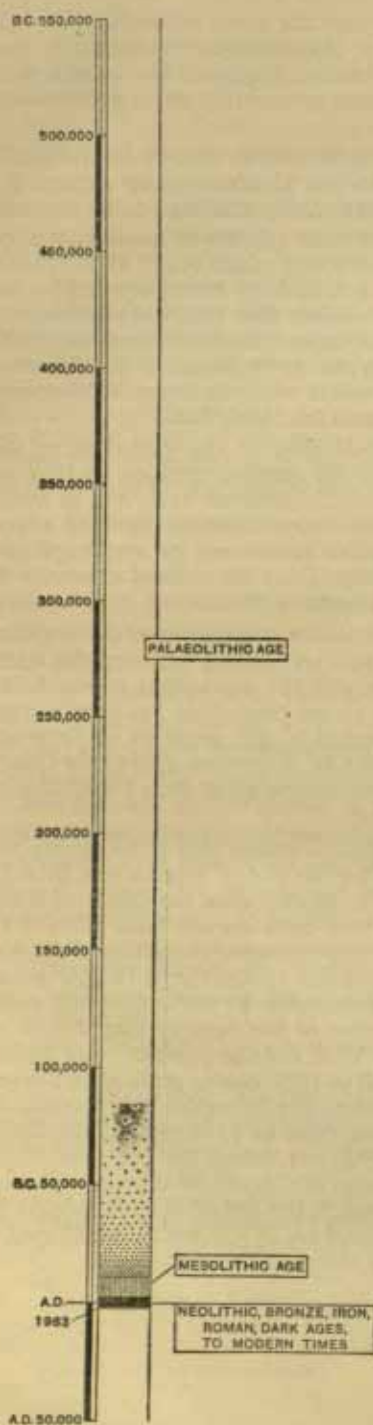
SCALE 2 shows the relative lengths of the main periods in human development since the close of the last ice Age which took place round about 12,000 B.C. Britain's archaeology and history have constantly been governed by her insular character and it is important to remember that this, when set against geological time, is a recent affair. It is not more than 8,000 years since the final remnants of the chalk barrier across the eastern end of the Channel were cut through and the great fresh-water marsh which had stretched between Britain and North-west Europe finally became the North Sea.

SCALE 3 attempts a more detailed sub-division of the period from the Mesolithic period to the present day with the relative position in time of some well-known historical events and personalities shown to tie it in to world affairs. Prehistoric phases are shown with sharp divisions between them. These are necessarily conventional and in fact there were no such hard and fast lines. The transitional phases certainly lasted for several centuries in each case and varied in length in different parts of Britain.

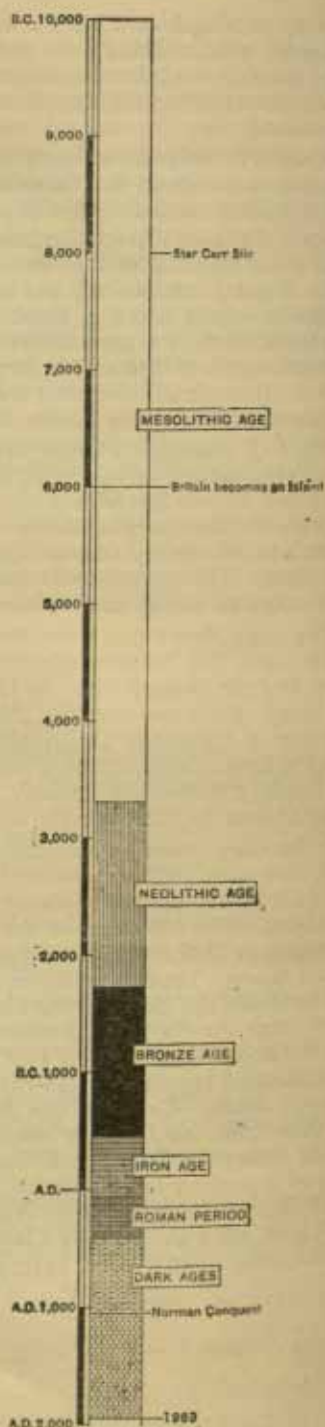
This scale shows that more time elapsed between the Roman Conquest of Britain and the Norman Conquest than has yet passed between the latter event and the present day. In 1962 we are still 127 years short of equalising the length of the two periods. Although in recent years there has been a great increase in interest in the Anglo-Saxon period it still tends to be drowned in a fog from which emerge a few figures like St. Augustine, Alfred the Great, the Danes, Ethelred the Unready, and Canute, almost all of them depending on some ancient popular tale for remembrance.

It therefore comes as something of a shock to realise that if we equate the year 1066 with 1962 the conventional date for the end of Roman rule in A.D. 420 falls in the reign of Edward II in 1316, shortly after the Battle of Bannockburn. The 655 years of our history which have elapsed from Edward I's accession in 1307 to the present day would only just cover the whole of Anglo-Saxon times. Thus the mission of St. Augustine to Kent in A.D. 597 would fall in 1493, the date of the discovery of America by Columbus and eight years after the Battle of Bosworth; the reign of the famous king Penda of Mercia would roughly cover that of Henry VIII, and the completion of Bede's Ecclesiastical History in A.D. 731 would fall in 1627, eleven years after Shakespeare's death. Carrying this process further, the beginning of the raids of the Northmen would cover the period from 1696 to 1731, Alfred the Great would defeat the Danes at Edington in 1772, just before the outbreak of the War of American Independence, and the reign of Canute would roughly cover the period of the First World War. Likewise, if the end of Roman rule (A.D. 420) took place in 1962 the Claudian conquest (A.D. 43) which established it would occur in 1585, four years before the defeat of the Armada.

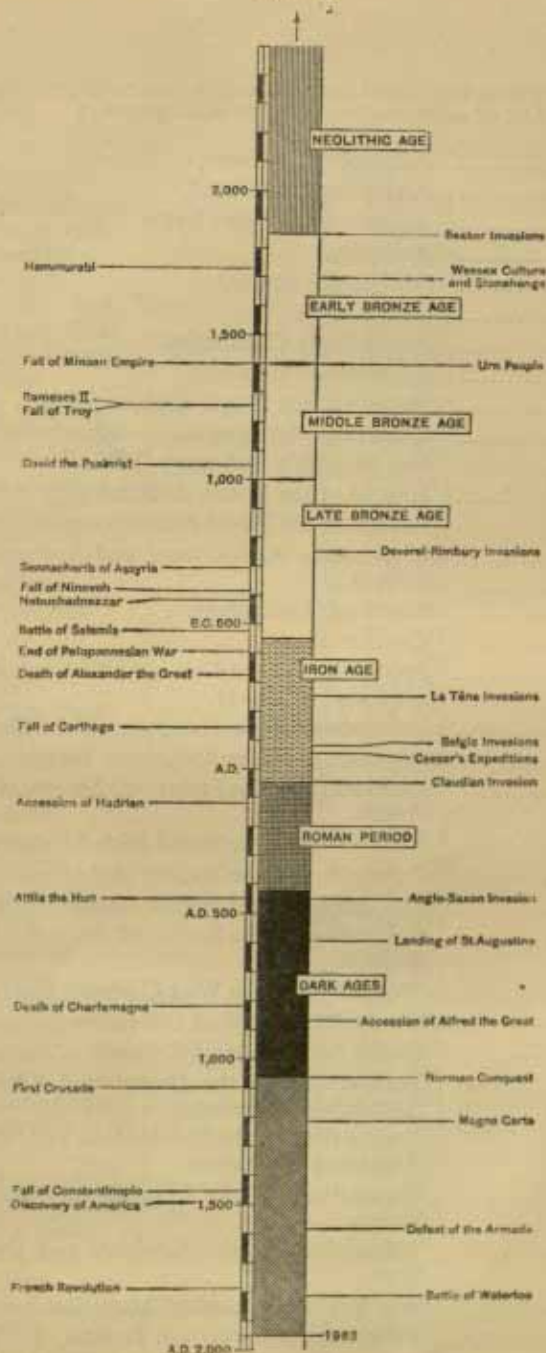
SCALE 1



SCALE 2



SCALE 3



List of abbreviations used in bibliographies

A.A.	Archæologia Aeliana.
A.J.	Archæological Journal.
A.N.L.	Archæological News Letter.
Ant.	Antiquity.
Ants. J.	Antiquaries Journal.
Arch.	Archæologia.
Arch. Camb.	Archæologia Cambrensis.
Arch. Cant	Archæologia Cantiana.
B.B.C.S.	Bulletin of the Board of Celtic Studies.
C.A.S.	Cambridge Antiquarian Society.
H.M.S.O.	Her Majesty's Stationery Office.
J.B.A.A.	Journal of the British Archæological Association.
J.R.A.I.	Journal of the Royal Anthropological Institute.
L.A.A.S.	Lincolnshire Architectural and Archæological Society.
M.A.	Medieval Archæology.
Oxon.	Oxoniensia.
P.D.A.E.S.	Proceedings of the Devon Archæological Exploration Society.
P.H.F.C.	Proceedings of the Hampshire Field Club.
P.P.S.	Proceedings of the Prehistoric Society.
P.P.S.E.A.	Proceedings of the Prehistoric Society of East Anglia.
P.R.I.A.	Proceedings of the Royal Irish Academy.
P.S.A.	Proceedings of the Society of Antiquaries.
P.S.A.I.	Proceedings of the Suffolk Archæological Institute.
P.S.A.S.	Proceedings of the Society of Antiquaries of Scotland.
P.W.C.F.C.	Proceedings of the West Cornwall Field Club.
Surr. A.C.	Surrey Archæological Collections.
Suss. A.C.	Sussex Archæological Collections.
T.B.G.A.S.	Transactions of the Bristol and Gloucestershire Archæological Society.
T.C.W.A.S.	Transactions of the Cumberland and Westmorland Archæological Society.
T.L.H.S.	Transactions of the Leicestershire Archæological Society.
T.N.D.F.C.	Transactions of the Newbury and District Field Club.
W.A.M.	Wiltshire Archæological Magazine.
Y.A.J.	Yorkshire Archæological Journal.

Gazetteer of places and sites mentioned in the text and bibliographies

NAME	National Grid reference	1 inch sheet
Aberford	SE 432 371	97
Aberystwyth	SN 580 815	127
Abingdon	SU 115 460	158
Abinger	TQ 115 460	170
A Cheardach Mhor	NF 758 398	23
Ackling Dyke	SU 000 140	179
Acton Burnell	SJ 530 020	118
Albury	TQ 055 484	170
All Cannings Cross	SU 080 630	167
Almondbury	SE 153 140	102
Alstoe Mount	SK 895 119	122
Allt Breac	NC 955 185	15
Andover	SU 365 455	168
Appledore	TQ 957 293	184
Arbor Low	SK 160 636	111
Ardifuar	NR 789 969	52
Arminghall	TG 240 060	126
Arras	SE 925 418	98
Ascot d'Oyley	SP 305 188	145
Ashill	TF 909 057	125
Ashton Park	ST 550 720	165
Assery, Tullochs of	ND 067 618	10
Avebury	SU 102 700	157
Aveline's Hole	ST 477 987	165
Avening	ST 885 980	156
Aviemore	NH 895 124	37
Aylesford	TQ 730 590	171
Baldock	TL 245 340	147
Balfarg	NO 284 034	56
Bamburgh	NU 184 350	71
Bantham	SX 663 437	187
Barclodiad y Gawres	SH 328 378	106
Barmouth	SH 610 610	116
Barnack	TF 076 047	123
Bartlow Hills	TL 585 449	148
Barton Mere	TL 911 665	136
Baschurch	SJ 424 220	118
Bath	ST 750 650	156
Bathampton Down	ST 775 650	166
Beacon Hill, Harting	SU 807 184	182
Becca Banks	SE 425 380	97
Beddgelert	SH 590 481	107
Bedford	TL 050 500	147
Belas Knap	SP 020 254	144
Benfleet	TQ 780 860	162
Benty Grange	SK 149 642	111
Bere Alston	SX 448 668	187

NAME	National Grid reference	1 inch sheet
Berkhamsted	SP 995 080	160
Berth, The	SJ 429 237	118
Bidford on Avon	SP 101 519	144
Birdlip	SO 927 144	143
Bitterne	SU 435 133	180
Black Isle, The	NH 650 600	28
Black Tor	SX 572 715	187
Blandford	ST 885 065	178
Bleasdale	SD 577 460	94
Bokerly Ditch	SU 150 180	167
Boltby Scar	SE 494 870	92
Boreham Wood	SU 130 660	157
Borgadail	NR 626 161	65
Boston	TF 320 440	114
Boyn Hill	SU 880 808	159
Braaid, The	SC 325 765	87
Bredon Hill	SO 960 400	144
Breidden, The	SJ 295 145	118
Brewham	ST 720 360	166
Bride Stones, The	SJ 906 622	110
Bridport	SY 465 930	177
Brigg	TA 000 070	104
Brighton	TQ 310 040	182
Brimham Rocks	SE 210 650	91
Bristol	ST 590 730	165
British Camp, Malvern	SO 760 401	143
Broadlee	NY 216 747	75
Broadstairs	TR 400 680	173
Bromham	TL 010 514	147
Broomfield	TL 707 105	161
Broxbourne	TL 368 072	161
Broxtowe	SK 536 424	112
Bryn Celli Ddu	SH 509 703	106
Bryn yr Hen Bobl	SH 690 519	106
Buckden	TL 192 676	134
Bull Ring, Doveholes	SK 079 781	111
Bully Hills	TF 330 827	105
Burgh Castle	TG 475 046	137
Burghhead	NJ 109 690	29
Burley	SK 882 106	122
Burnswark	NY 185 786	75
Burton Constable	TA 189 369	99
Burwell	TL 585 660	135
Buttington	SJ 242 089	117
Caerau	SH 470 480	115
Caerleon	ST 371 905	155
Cae'r Mynydd	SH 572 646	107
Caerwent	ST 470 905	155
Caer yr Twr	SH 220 830	106
Caesar's Camp, Folkestone	TR 214 379	173
Cairnpapple	NS 987 717	61
Caister on Sea	TG 515 125	126
Calf of Eday	HY 580 390	5
Callanish	NB 214 330	12
Campbeltown	NR 720 205	65

NAME	National Grid reference	1 inch sheet
Cana	SE 361 719	91
Canterbury	TR 160 580	173
Canvey Island	TQ 800 830	162
Capel Garmon	SH 818 544	107
Caplar Camp	SO 590 330	142
Carlungie	NO 513 357	50
Carn Bodfean	SH 310 393	115
Carn Brea	SW 683 407	189
Carnedd Hengwm	SH 610 205	116
Carrowburgh	NY 866 711	77
Castell Collen	SO 055 630	128
Castell Odo	SH 187 285	115
Castle Dore	SX 103 548	186
Castle Rough	TQ 918 659	172
Castor	TL 125 985	134
Caterthun, The White	NO 547 660	50
Catstane, The	NT 149 743	62
Cawthorn	SE 780 900	92
Cefn Coch	SH 723 747	107
Chanctonbury Ring	TQ 140 120	182
Charterhouse on Mendip	ST 502 560	165
Cheddar	ST 456 532	165
Cheesewring, The	SX 253 723	186
Chertsey	TQ 043 670	170
Chester	SJ 405 665	109
Chesters	NY 912 702	77
Chichester	SU 860 048	181
Chippenham	ST 920 735	156
Chun Castle	SW 405 340	189
Chute Causeway	SU 300 551	168
Chysauster	SW 473 350	189
Cirencester	SP 025 015	156
Cissbury	TQ 140 080	182
Clacton	TM 180 150	150
Clarendon Palace	SU 182 302	167
Clava	NH 757 444	28
Clavering	TL 470 318	148
Cleaven Dyke	NO 165 405	49
Clegyr Boia	SM 738 251	138
Clickhimin	HU 464 408	3
Clifton (Notts.)	SK 551 360	112
Clopton	TL 310 485	147
Clovelly Dykes	SS 312 235	174
Clynnog Fawr	SH 415 497	115
Coalbrookdale	SJ 668 045	118
Coggeshall	TL 850 225	149
Colchester	TL 995 250	149
Cold Kitchen Hill	ST 833 338	166
Cole's Pits	SU 294 934	158
Combe Martin	SS 585 465	163
Conon Bridge	NH 543 551	28
Conon, Grange of	NO 581 446	50
Contin	NH 443 569	27
Corbridge	NY 989 644	77
Cornbury	SP 350 182	145

NAME	National Grid reference		1 inch sheet
Covesea	NJ	190 710	29
Coxwell	SU	294 934	158
Cramond	NT	190 770	62
Cranborne Chase	ST	940 170	179
Creswell Crags	SK	535 743	112
Crichel Down	ST	963 101	178
Crichton	NT	400 620	62
Cricklade	SU	100 935	157
Cromwell	SK	798 617	112
Culbin Sands	NJ	010 630	29
Culbokie	NH	594 577	28
Culloden Moor	NH	740 450	28
Dalmahoy	NT	130 665	62
Damerham	SU	105 163	179
Danby Rigg	NZ	710 060	86
Danes' Graves	TA	020 633	99
Deganwy	SH	780 795	107
Denny	TL	493 684	135
Devil's Arrows, The	SE	392 667	91
Devizes	SU	005 615	167
Dinas Emrys	SH	605 492	107
Dinas Powys	ST	145 735	154
Din Lligwy	SH	497 862	106
Dinorben	SH	968 757	108
Ditchley	SP	395 210	145
Dolaucothy	SN	664 403	140
Doncaster	SE	570 030	103
Donnington Castle	SU	462 691	158
Dorchester (Dorset)	SY	695 905	178
Dorchester (Oxon.)	SP	578 944	158
Dorset Cursus, The	SU	006 138	179
Doveholes	SK	079 781	111
Droitwich	SO	900 630	130
Druim Vargie Cave	NM	859 304	46
Duddo Four Stones	NT	931 437	64
Duggleby Howe	SE	880 669	98
Dunadd	NR	837 936	52
Dunbarton	NS	400 744	60
Dun Bhuirg	NM	423 262	51
Dun Burgidale	NS	080 590	59
Dundry Hill	ST	565 665	156
Dundurn	NN	707 233	54
Dunearn	NT	214 872	55
Dunnideer, Hill of	NJ	612 282	39
Dunnottar	NO	882 839	43
Dunollie	NM	882 315	46
Dunstable	TL	020 220	147
Dunwich	TM	480 705	137
Durn Hill	NJ	571 638	30
Durrington Walls	SU	150 437	167
Earith	TL	385 747	134
Easton Down	SU	238 358	167
Eddisbury	SJ	552 695	109
Edinburgh	NT	252 735	62

NAME	National Grid reference	1 inch sheet
Edington	ST 925 533	166
Edin's Hall	NT 772 603	64
Ehenside Tarn	NY 005 070	88
Eildon Hill North	NT 580 746	63
Ely, Isle of	TL 500 800	135
Eston Nab	NZ 567 184	86
Evesham	SP 038 438	144
Ewe Close	NY 609 135	83
Ewyas Harold	SO 384 288	142
Exeter	SX 920 920	176
Fargo Plantation	SU 115 433	167
Faringdon Clump	SU 297 956	158
Farnham (Surrey)	SU 840 470	169
Farthing Down	TQ 300 580	170
Ffridd Faldwyn	SO 220 970	128
Figheledean Down	SU 190 490	167
Finavon	NO 506 566	50
Five Knolls, Dunstable	TL 006 210	147
Five Wells, Taddington	SK 125 710	111
Foale's Arrishes	SX 738 759	175
Foremark Wood	SK 344 270	120
Forse	ND 220 340	16
Four Stones	SO 245 608	128
Fowey	SX 125 516	186
Framlingham	TM 285 635	137
Freswick	ND 380 680	7
Frilford	SU 438 960	158
Fulham	TQ 240 760	170
Fussell's Lodge	SU 192 324	167
Fyfield Bavant Down	SU 000 250	167
Gainsthorpe	SE 965 011	104
Garrywhin	ND 312 413	16
Gateholm	SM 770 072	138
Glastonbury	ST 500 390	165
Gloucester	SO 830 180	143
Golspie	NC 830 000	22
Goodmanham	SE 890 430	98
Gordale	SD 910 650	90
Gorsey Bigbury	ST 484 558	165
Gosbeck's Farm	TL 974 229	149
Gough's Cave	ST 466 539	165
Graig Llwyd	SH 725 758	107
Grange of Conon	NO 581 446	50
Grassington	ST 003 641	90
Great Ayton Moor	NZ 600 120	86
Great Casterton	TF 001 090	122
Great Chesterford	TL 505 428	148
Great Grimsby	TA 270 090	105
Greensted	TL 539 030	161
Grimes Graves	TL 816 900	136
Grimspound	SK 701 809	188
Grimthorpe	SE 813 530	98
Grummore	NC 605 372	10
Gurness, Broch of	HY 385 268	5

NAME	National Grid reference	1 inch sheet
Gwithian	SW 586 412	189
Haldon Hill	SX 900 830	176
Halkin Mountain	SJ 190 710	108
Hall Hill, West Keal	TF 358 638	114
Halliggye	SW 714 238	190
Halstow	TQ 860 674	172
Hamstead Marshall	SU 414 654	158
Hamsterley	NZ 104 330	84
Hamwih	SU 430 120	180
Hanging Grimston	SE 805 620	98
Hardknott	SD 218 015	88
Harehope	NT 203 448	62
Harlow	TL 472 116	161
Harold's Stones	SO 500 051	142
Harrow Hill	TQ 080 100	182
Harting	SU 786 196	181
Hawnby Moor	SE 540 930	92
Hayhope Knowe	NT 860 176	70
Hazard Hill	SX 755 593	188
Heathery Burn	NY 940 420	84
Helmsley	SE 613 838	92
Hembury	ST 112 030	176
Hengistbury Head	SZ 170 910	179
Hereford	SO 510 400	142
Herefordshire Beacon	SO 760 401	143
Hessleskew	SE 928 405	98
Hingston Down	SX 380 710	186
Hod Hill	SU 855 105	178
Hogh Bay, Coll	NM 167 573	44
Holborough	TQ 698 627	171
Holdenhurst	SZ 128 953	179
Holt	SJ 410 540	109
Holyhead	SH 240 820	106
Horncastle	TF 260 695	114
Horningsea	TL 493 626	135
Horsey Hill	TF 223 960	134
Housesteads	NY 790 688	77
Howell's Castle	SN 127 018	152
Hownam Rings	NT 791 194	70
Hoy's Farm	TL 341 422	147
Huntingdon	TL 240 720	134
Hurlers, The	SX 258 714	186
Hurst Fen	TL 726 776	135
Hutton Colswain	SE 760 670	92
Hutton Moor	SE 352 735	91
Ilchester	ST 522 227	177
Inchtuthill	NO 125 397	49
Ingleborough	SD 741 746	90
Ingleby	SK 350 270	120
Ingoldmells Point	TF 575 685	114
Inkpen Beacon	SU 355 620	168
Iona	NM 286 245	51
Ipswich	TM 170 440	150
Itford	TQ 445 055	183

NAME	National Grid reference	1 inch sheet
Ixworth	TL 933 705	136
Jarlshof	HU 399 096	4
Kaimes Hill	NT 130 665	62
Kelling Heath	TG 100 420	125
Kenfig	SS 800 825	153
Kent's Cavern	SX 934 642	188
Kestor	SX 692 877	175
Kildonan	NC 911 209	15
Kiloran Bay, Colonsay	NR 400 980	51
Kilpheder	NF 742 196	23
Kimmeridge	SY 792 905	179
King Arthur's Round Table	NY 524 284	83
King Lud's Intrenchments	SK 865 280	122
Kingston Down (Purbeck)	SY 956 780	178
Kinpurney Hill	NO 323 417	50
Kirkliston	NT 149 743	62
Kirtling	TL 686 574	135
Knap Hill	SU 121 636	167
Knoc y doonee	SC 406 021	87
Knowlton	SU 025 104	178
Lackford	TQ 775 713	135
Lacock	ST 919 684	156
Ladle Hill	SU 479 568	168
Lanchester	NZ 166 475	85
Land's End	SW 340 250	189
Langwell Wag	ND 016 260	16
Lanhill	ST 877 747	156
Lasswade	NT 308 655	62
Launceston Down	ST 958 108	178
Lead Hills	NS 885 150	68
Leatherhead	TQ 165 565	170
Legis Tor	SX 570 652	187
Leicester	SK 585 045	122
Lerwick	HU 475 415	3
Lewes	TQ 420 102	183
Lexden	TL 968 249	149
Limlow Hill	TL 323 418	147
Lincoln	SK 970 710	113
Litlington	TL 314 427	147
Little Woodbury	SU 149 277	167
Litton Cheney	SY 552 907	178
Llanblethian	SS 976 736	154
Llandow	SS 941 734	154
Llantwit Major	ST 967 687	154
Llyn Cerrig	SH 306 765	106
Loanhead of Daviot	NJ 750 302	40
Lockley's	TL 236 160	160
Long Meg and her Daughters	NY 571 373	83
Long Stone, The (Mottistone)	SZ 407 843	180
Louth	TF 320 875	105
Loveden Hill	SK 908 459	113
Lowbury	SU 540 823	158
Luce Bay	NX 140 550	79

NAME	National Grid reference	1 inch sheet
Lullingstone	TQ 530 644	171
Lydney	SO 630 030	156
MacArthur Cave	NM 857 296	46
Maes Howe	HY 317 127	6
Maiden Bower	SP 997 225	147
Maiden Castle (Dorset)	SY 668 884	178
Maidenhead	SU 880 810	159
Maiden Newton	SY 598 978	178
Malham	SD 900 630	90
Malton	SE 780 710	92
March	TL 410 960	135
Marden	SU 090 582	167
Margam Mountain	SS 810 890	153
Markinch	NO 298 020	56
Martin Down	SU 043 195	179
Mauchrie Moor	NR 911 325	66
Maumbury Rings	SY 690 900	178
Mawgan Porth	SW 673 855	185
Maxey	TF 128 082	123
Mayburgh	NY 519 284	83
Meare	ST 455 417	165
Meigle	NO 286 446	49
Melrose	NT 548 340	69
Mere	ST 815 325	166
Merrivale	SX 555 747	187
Mersea Island	TM 030 140	149
Merthyr Mawr	SS 860 770	153
Metchley	SP 042 837	131
Mid Clyth	ND 290 376	16
Milber Down	SX 085 698	188
Milfield	NT 935 338	64
Milton Abbas	ST 805 018	178
Milton by Sittingbourne ...	TQ 902 646	172
Minchinhampton	SO 850 010	156
Mitcham	TQ 270 680	170
Mither Tap of Bennachie ...	NJ 684 224	40
Moel Fenlli	SJ 162 600	108
Mote of Mark	NX 845 541	81
Mottistone	SZ 407 843	180
Muir of Ord	NH 527 497	27
Mutlow Hill	TL 546 544	148
Nettleton Shrub	ST 821 769	156
Newark on Trent	SK 797 540	112
New Barn Down	TQ 100 100	182
Newborough Warren	SH 410 640	106
Newbury	SU 470 670	158
Newstead	NT 505 341	69
Newtown (Isle of Wight) ...	SZ 425 907	180
Newtown (Poole Harbour) ...	SZ 101 860	179
Nine Maidens	SW 435 352	189
Noah's Ark, Frilford	SU 438 962	158
Norman's Law	NO 244 063	55
Normanton Down	SU 115 410	167
Northampton	SP 750 600	133

NAME	National Grid reference	1 inch sheet
North Stoke	SU 610 863	158
North Treveneague	SW 548 327	189
Norton by Malton	SE 795 715	92
Norton Disney	SK 860 600	113
Notgrove	SP 096 212	144
Nutbane	SU 331 496	168
Nuthampstead	TL 413 347	148
Oakengates	SJ 698 110	119
Oakhanger	SU 770 360	169
Oakley Reynes	TL 101 530	147
Oak Mere	SJ 576 678	109
Oban	NM 860 300	46
Old Basing	SU 662 526	168
Old Keig	NJ 599 193	39
Old Oswestry	SJ 293 310	118
Old Sarum	SU 137 327	167
Old Windsor	SU 992 746	170
Oronsay	NR 890 360	51
Overhowden	NT 486 524	62
Oxton	NT 486 535	62
Pachenesham Magna	TQ 155 578	170
Pagham	SZ 884 975	181
Pant y Saer	SH 508 823	106
Parc Dinmor	SH 634 815	106
Park Brow	TQ 154 090	182
Park Place, Henley on Thames	SU 775 820	159
Parys Mountain	SH 440 900	106
Penmaenmawr	SH 710 760	107
Penmon	SH 623 807	107
Pen Pits	ST 767 318	166
Pershire	SO 950 460	144
Pierowall	HY 437 485	5
Pike of Stickle	NY 273 074	82
Pitcur	NO 254 374	49
Plumpton Plain	TQ 360 126	183
Postern Hill	SU 195 680	157
Potter Hanworth	TF 055 662	113
Potterspury	SP 755 433	146
Priddy Circles	ST 540 530	166
Quarley Hill	SU 263 423	167
Quatford	SO 738 910	130
Radstock	ST 690 550	166
Raedykes	NO 840 900	40
Rahoy	NM 680 560	45
Ramsey	SC 450 940	87
Reading	SU 710 730	159
Redbourne	TL 108 123	160
Rendlesham	TM 325 528	150
Renhold	TL 089 529	147
Repton	SK 303 270	120
Richard's Castle	SO 495 700	129
Richborough	TR 325 601	173
Rickingham	TM 045 755	136
Rickmansworth	TQ 060 945	160

NAME	National Grid reference		1 inch sheet
Ringmoor Down	SX	563 662	187
Risby Warren	SK	920 130	104
Riseholme	SK	980 753	104
Rochester	TQ	740 680	172
Rockley Down	SU	150 733	157
Rollestone	SU	074 431	167
Rollright Stone	SP	295 309	145
Ronaldsway	SC	280 685	87
Rosail	NC	690 410	10
Rotherley	ST	940 190	179
Rougham	TL	900 617	136
Rough Tor	SX	145 807	186
Rousay	HY	400 300	6
Rowberrow	ST	450 580	165
Royston	TL	356 406	148
St. Albans	TL	145 070	160
St. Bee's Head	NX	940 140	82
St. Justinian's Chapel	SM	724 253	138
St. Nicholas	ST	087 732	154
Salisbury	SU	145 300	167
Sanctuary, The	SU	118 679	157
Savernake Forest	SU	230 660	157
Scamridge Dykes	SE	900 860	93
Scarborough	TA	040 890	93
Seacourt	SP	485 075	158
Seamer	TA	015 838	93
Seaton	SY	900 240	177
Selsley Common	SO	828 030	156
Sempringham	TF	100 330	113
Sewell	SP	995 230	147
Shap	NY	562 154	83
Shapwick	ST	418 382	165
Sheppey, Isle of	TQ	950 720	172
Shippea Hill	TL	642 848	135
Shoeburyness	TQ	940 847	162
Shudy Camps	TL	620 445	148
Silbury Hill	SU	100 685	157
Silchester	SU	640 625	168
Sittingbourne	TQ	900 630	172
Six Bells (Farnham)	SU	853 476	169
Skara Brae	HY	230 188	6
Skegness	TF	560 630	114
Skendleby	TF	429 711	114
Skipsea	TA	165 568	99
Skomer Island	SM	725 095	138
Sleaford	TF	060 450	113
Snape	TM	403 593	137
Snailwell	TL	643 676	135
Soldier's Ring	SU	082 175	179
Solsbury	ST	768 680	156
Southampton	SU	420 110	180
South Elkington	TF	297 883	105
South Ferriby	SE	988 210	98
Southgrove Copse	SU	230 590	167
South Lodge	ST	954 174	179

NAME	National Grid reference	1 inch sheet
South Mimms	TL 229 025	160
Southoe	TL 183 640	134
Stafford	SJ 920 230	119
Stainmore Pass	NY 900 120	84
Stamford	TF 030 070	123
Standon Down	SX 550 825	175
Stanton Drew	ST 601 632	166
Stanton Moor	SK 248 635	111
Star Carr	TA 025 811	93
Stenness	HY 306 126	6
Stirling	NS 790 940	54
Stockbridge Down	SU 373 349	168
Stonea	TL 448 930	130
Stonehenge	SU 123 422	167
Stonehenge Cursus	SU 125 430	167
Stratford on Avon	SP 200 550	144
Strathnaver	NC 710 500	10
Stretton (Staffs.)	SJ 884 115	119
Stump Cross (Yorks.)	SE 090 635	90
Stuntney	TL 555 780	135
Sutton Courtenay	SU 500 940	158
Sutton Hoo	TM 287 487	150
Sutton Walls	SO 525 464	142
Swaffham Prior	TL 570 640	135
Swallowcliffe Down	ST 970 250	167
Swarling	TR 130 529	179
Sydling St. Nicholas	SY 640 985	178
Taiversoe Tuack	HY 425 276	6
Tamworth	SK 210 040	120
Taplow	SU 910 820	159
Tathwell	TF 320 830	105
Tempsford	TL 162 530	147
Tenby	SN 035 005	156
Tents Muir	NO 490 240	56
Tetney	TA 314 010	105
Thanet, Isle of	TR 330 670	173
Therfield Heath	TL 340 400	147
Thetford (Norfolk)	TL 870 830	136
Thickthorn Down	ST 972 123	179
Thornborough	SE 285 795	91
Thornham	TF 735 434	124
Thorny Down	SU 210 342	167
Thundersbarrow Hill	TQ 230 085	182
Tiddington	SP 223 559	131
Tilbury Fort	TQ 651 754	171
Tintagel	SX 050 890	185
Ton-mawr	SS 825 870	153
Torksey	SK 837 789	104
Torphichen	NS 967 724	61
Torwoodlee	NT 465 384	69
Totnes	SX 801 604	188
Traprain Law	NT 580 745	63
Trearddur Bay	SH 255 788	106
Trebarveth	SW 794 200	190
Tregear Rounds	SX 033 801	186

NAME	National Grid reference	1 inch sheet
Trelissey	SN 175 084	152
Tre'r Ceiri	SH 574 447	115
Trewey Down	SX 575 640	187
Trowlesworthy Warren	SW 462 369	189
Truderscaig	NC 690 340	14
Trundle, The	SU 877 111	181
Tullochs of Assery	ND 067 618	10
Turin Hill	NO 515 534	50
Ty Isaf	SO 182 291	141
Tynron Doon	NX 819 940	74
Uffington Castle	SU 300 864	158
Ugadale Point	NR 594 483	65
Ulrome	TA 168 550	99
Upchurch	TQ 844 675	172
Vowlan Fort	SC 450 958	87
Waddon Hill	ST 447 016	158
Wade's Stone	NZ 831 130	86
Wallingford	SU 600 890	158
Walls Hill	NS 412 588	60
Walton (Radnor)	SO 257 598	128
Wareham	SY 920 870	179
Warham	TF 945 409	125
Warrington	ST 605 885	101
Warsash	SU 494 062	180
Water Newton	TL 109 973	134
Weedon	SP 630 595	132
Weedon Lois	SP 601 470	145
Welwyn	TL 230 160	160
Wemyss	NT 343 970	56
Wendy	TL 324 480	147
West Keal	TF 365 636	114
West Kennet	SU 104 677	157
West Plean	NS 819 877	54
West Rudham	TF 820 280	125
Weybridge	TQ 070 640	170
Wharncliffe	SE 305 945	102
Wharram Percy	SE 857 643	98
Whitby	NZ 898 110	86
White Caterthun	NO 547 660	50
Whitehawk Camp	TQ 330 048	182
Whitesheet Hill	ST 804 350	166
Wilderspool	SJ 615 865	101
Willerby Wold	TA 012 763	93
Willington	TL 115 496	147
Winchelsea	TQ 900 170	184
Winchester	SU 480 295	168
Windmill Hill (Avebury)	SU 087 715	157
Winterborne Stoke	SU 102 417	167
Witham	TL 820 150	149
Wiveliscombe	ST 090 270	164
Woden Law	NT 769 124	70
Womaston (Radnor)	SO 267 606	128
Woodbridge	TM 270 490	150
Woodbury	SU 144 280	167

NAME	National Grid reference		1 inch sheet
Woodcutts	ST	960 180	179
Woodeaton	SP	535 119	149
Woodhenge (Norwich)	IG	240 060	126
Woodhenge (Wilts.)	SU	151 434	167
Woolbury	SU	381 353	168
Wooler	NT	990 280	71
Wor Barrow	SU	012 174	179
Wrekin, The	SJ	628 080	118
Wroxeter	SJ	563 088	118
Wykeham	SE	965 834	93
Yarrows	ND	304 431	16
Y Bwlwarcaw	SS	839 886	153
Yeavinger	NT	926 305	64
Ynys Seiriol	SH	650 820	107
York	SE	600 520	97
Zennor	SW	454 385	189

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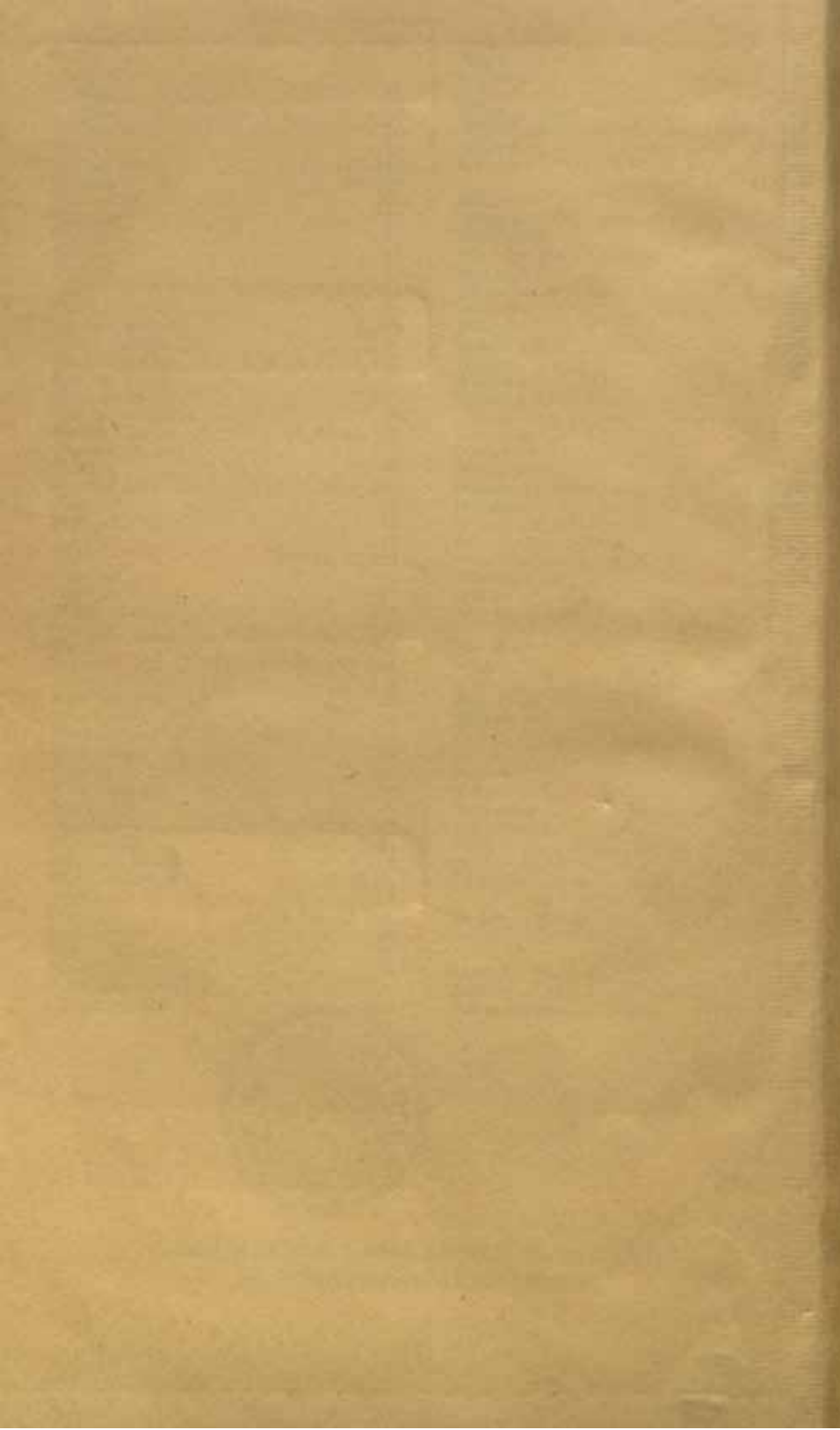
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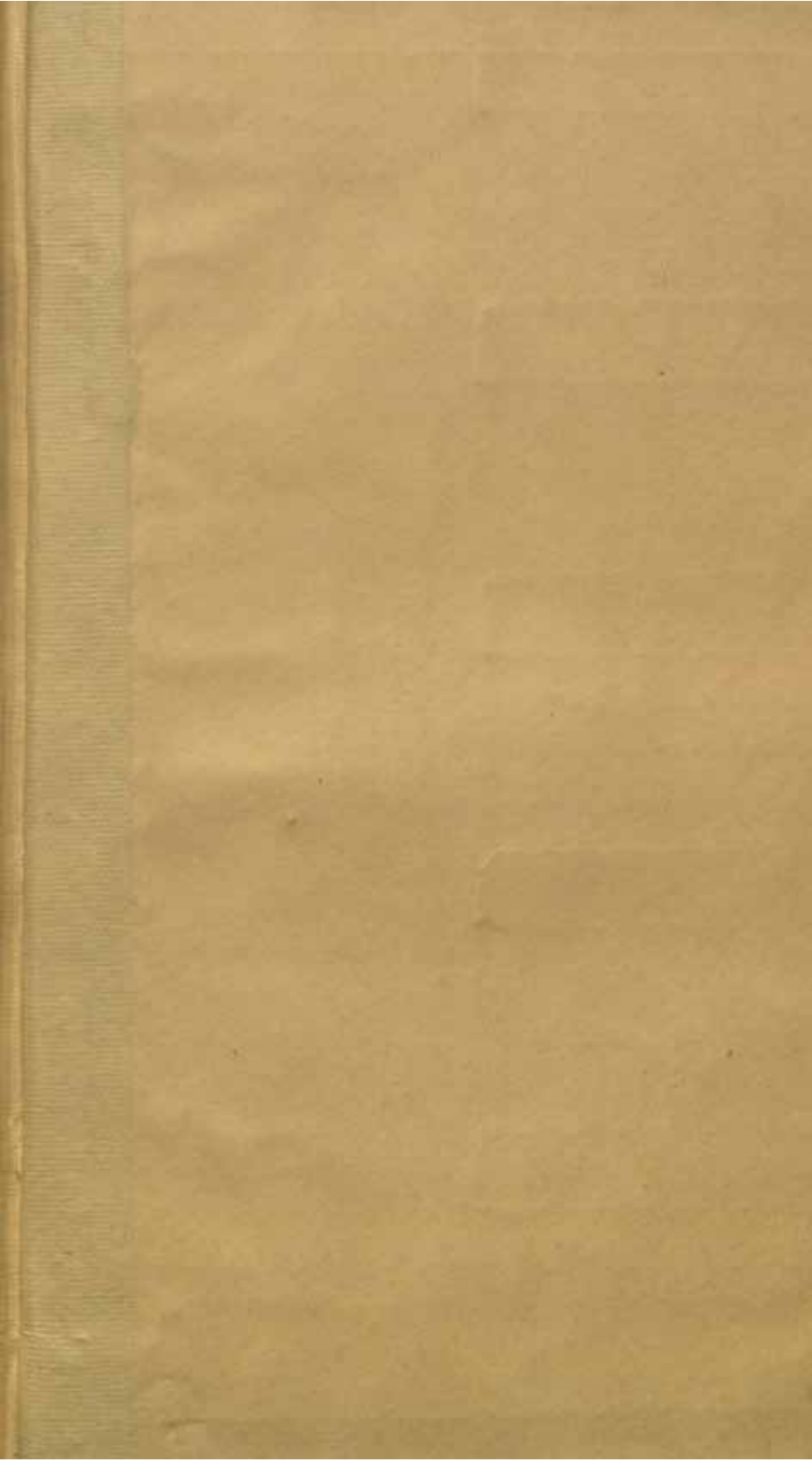
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